ARMY
APRIL 1960 • 60¢

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Expedite Redeye SAM	1,200	7.8
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Expedite Little John SSM	600	4.8
Expedite Sergeant SSM	50	20.2
Honest John	701	17.5

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(millions)

Mohawk surveillance aircraft	6	$ 4.7
Iroquois Transport helicopter	62	20.2
Medium troop and cargo helicopter	74	15.0
Caribou battlefield transport aircraft	36	21.3
Seminole combat command and control aircraft	19	2.9
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Chinook heavy troop and transport helicopter	6	9.0
	53	7.9

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Rolling fluid transporter	945	4.8
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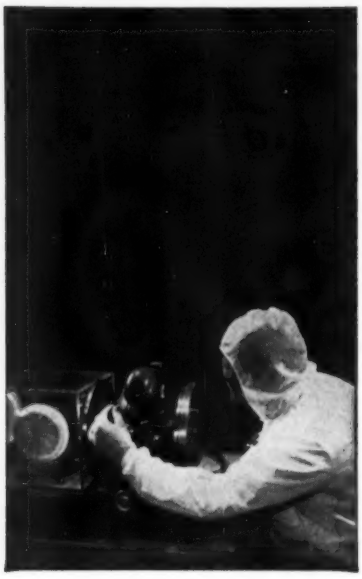
Ammunition for 105mm howitzers	551,000 rds.	
155mm gun	115	
Ammunition for 175mm gun	250,000 rds.	
81mm mobile support mortar	60	
Ammunition for 81mm mortars	807,000 rds.	
115mm chemical rocket and launchers	13,000	
Field artillery fire control instruments	3,400	
90mm recoilless rifle	1,000	
Ammunition for 90mm recoilless rifle	280,000 rds.	
Ammunition for [illegible] artillery	335,000 rds.	



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THE MONTH'S MAIL

OUR NEEDS IN WEAPONS

● Let me add my enthusiastic and congratulatory Amen! to your February editorial, "Who Said Barnum Was Right?" and to voice the no doubt heretical observation that there are probably more persons than one who are capable of sound determination of the country's needs in weapons.

COL. FRED C. DYER
Indianapolis, Ind.

USE WELL-DEFINED FEATURES

● As an officer who might be called on to adjust fire in the absence of an artillery observer, I have a question regarding "How Accurate Are Our Maps?" by Jacob Skop in the February number.

What did Mr. Skop provide except an article on maps? Let us go back to the problem: inaccurate artillery fire and the rule of thumb that Captain Gunner devised. Wouldn't another paragraph, or better perhaps, another page *giving* a more exact explanation and a procedure for the non-artilleryman be in order?

It would seem that for an artilleryman to make such stupid errors as were made in the article would be serious grounds for command investigation. For a signal officer who had to direct fire it would be excusable, but the article did not spell out the cure.

LT. COL. WILLIAM A. FOOTE
San Diego, Calif.

ON DELEGATING ARTICLE 15

● I fully agree with Captain Bashore's proposals to delegate the punitive powers of Article 15 [January] down to platoon and squad leaders. Too often the approach to abuses of authority has been to withhold or limit that authority. A more positive approach would be to eliminate those leaders, officer or noncommissioned, who cannot properly exercise the authority vested in the position or the rank they hold.

The delegation of certain nonjudicial punitive powers to squad and platoon leaders cannot help but improve discipline and the prestige of the noncommissioned officer. Those who argue that we can have good discipline under existing regulations miss the point. We need better, more deeply ingrained discipline —discipline under all conditions—not the kind that depends upon the presence of an officer. Quick, on-the-spot, and *legal* application of punitive powers to minor offenders by the immediate noncommissioned leader will go a long way toward achieving this.

Captain Bashore's proposals deserve serious study by those who have the power to change the current system.

CAPT. A. W. SINGLETARY
APO 177, New York, N. Y.

REPRIMANDS "THE REPRIMAND"

● The article "The Reprimand" in your February issue is a blot on the escutcheon of ARMY. How can you print such sadistic trash? The author calls himself a soldier and a sociologist. His article would get him a flunking grade in both departments from any self-respecting sociologist *or* soldier.

I thought at first the article was a satire intended to condemn the type of brutality (mental or physical) of the *From Here to Eternity* era. I still can't believe he means it. The sad part is that many readers *will* believe it, merely because you published it—and because we lend credence to the utterings of "educated" and "cultured" people.

I'm sure that the Captain's hobby is still what it must have been in his

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youth: tearing wings off butterflies.

My research indicates that about 95 per cent of all reprimands do more harm than good. All we need to raise it to 100 per cent is to adopt the author's formula.

The article *can* serve one useful purpose. Please offer it to all officer and noncommissioned officer schools as a bad example for a lecture on how *not* to reprimand.

LT. COL. CHARLES F. AUSTIN
Fort Belvoir, Va.

● Believe me when I say that "The Reprimand" does no good either for the Army, our Association, or the members of AUSA.

No one will deny the place of a reprimand as a necessary part of existence. However, a leader more properly places emphasis on positive leadership traits as a means of obtaining order and discipline.

The coldly analytical approach recommended by the author—the period of anxious suspense, the setting of the stage, the lulling into the false sense of security, the traumatic attack—these things smack of too much relish and pleasure on the part of the reprimander, rather than the problem of trying to make a good soldier out of a poor one. This is further indicated by referring to the event as a "ceremony."

This article provides grist for the mills of those who mean no good for the Army, or the armed services. It probably ranks along with that Air Force manual which included instructions on how airman should wash officers' dogs.

However, I did enjoy the clear-cut description of the "functional budget" by Mr. Stevenson. It is something which vitally affects all of us.

I also appreciated Mr. Skop's article on maps, which gave me information about maps I never received in the many courses in map reading I've had throughout the years.

LT. COL. RALPH N. TUDOR
Long Island City, N. Y.

● A couple of years ago, Captain Roger W. Little wrote a long piece on the modern mass army ["Solidarity is the Key to the Mass Army," February 1955], complete with soldiers, interchangeable and pre-digested, in which it seemed to me he drew a few false conclusions easily done by those who had not been in the ancient RA. Now he has written a much shorter piece on the tactics and technique involved in chewing the seat out of an offender's pants in the most effective way. I think he may have made up for earlier mistakes.

The popular idea of a chewing involves someone being compared to various and sundry useless, promiscuous, worthless, and in general odoriferous things, animals, or low-grade morons. All this in as many languages as the chewer can command. Sometimes the "chewee" retires into his personal shell and thinks how nice it would be to have his superior fricasseed, as the barrage bursts a few inches over his head where it won't hurt him.

Captain Little suggests the adroit use of the needle, or its larger form, the shaft, placed with great care where it will irritate most and have future good results. Perhaps he could write a complete guide to this form of reaming.

Once I served in an outfit of 17 second lieutenants and 85 enlisted men. We had one brash character who was always a bit out of line and not influenced by extra duty. Our second in command was a quiet chap who was respected by all hands as a good officer, a polite person who could get results out of anyone. One day the brash lad sounded off too loudly, and the Lieutenant invited him in for an intimate chat.

Some of us gathered around the office door, in anticipation of hearing the sound of exotic cursing and the rumble of Jovian thunder. Nothing. For about half an hour we could hear only a quiet conversation that did not carry distinctly. Then the door opened and out came the 8-ball, sweating gobs of sweat the size of crab apples.

"What did he say to you?"

"He said I was traveling down the narrow, twisty road of sin, and he showed me the broad, straight pathway of duty and told me I'd better keep on the beam."

Later he mentioned it more fully. He had never been spoken to so politely, without the least use of profanity, or threat. He had not been compared to the offspring of the canine, or the by-products of prostitution, but he had never been given such a merciless going-over in three years of service.

The Lieutenant's stock was already high. This jacked up our opinion of him as a really rare type. I still think so.

AMATEUR NIBBLER

ARMY HAS EARNED RESPECT

● Recently on a television show I saw the first of Allen Funt's "Candid Camera" series taken at Fort Dix, which was evidently approved by the post commander.

Although this thing was undoubtedly intended to be harmless amusement and entertainment for the masses, it probably contributes to a traditional derogation of the U. S. Army. Many similar examples have appeared with increasing frequency, such as the Phil Silvers Show, cartoon strips like Beetle Bailey, and many, many more.

I don't wish to be stuffy or unreason-

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able, but it seems to me that what the Army needs from the nation it serves, and has needed for a long time, is a high sense of dignity, respect and pride. A little affectionate ridicule is OK, but a little can go a long way sometimes. Especially when it is not balanced out by constructive complimentary remarks.

During my 32 years of service in the Army I've had the privilege of being an Infantryman in every grade from private to lieutenant colonel, in both peacetime and in combat. I have commanded a recruiting and induction main station and been an information and education officer. I take great pride in the fact that once I was chief of education for the Army Ground Forces.

Now I recall the tremendous difficulty we have experienced in trying to sell the Army to its public; of trying to get good young men and women into the service—and of keeping them there. Often we have worked under the unnecessary handicap of public apathy and even extreme ridicule.

Of course we can have the dubious satisfaction of knowing that we have gone about our jobs with few complaints from anyone except the ignorant. However, the results could have been far greater if we had had public understanding and support.

For the sake of our country, if nothing else, let's demand the respect for the Army that it has so definitely earned.

MAJ. RUSSELL A. BRONER
Sioux Falls, S. D.

MORE SPEED IN COMMO

● I would like to add a hearty indorsement to the article "Why the Flash Is Deferred" in the February issue. By having the privilege of being associated with one of the largest teletypewriter stations in the world, it enables one to clearly study and evaluate the worthiness of this article.

The trend of present-day communications is toward better security, more speed and greater reliability. The precedence system suggested would certainly provide greater efficiency and be a step forward in this era of expanding communications.

LT. JOSEPH W. TAYLOR
APO 189, New York, N. Y.

REPELLING OF US

● As a graduate of the basic and advanced rock climbing courses at Fort Carson, Colo., I am delighted to point out that you misspelled the word "rappelling" in the caption of the picture on page 55 of your February issue.

MAJ. MORTON N. KATZ
Hartford, Conn.

8-BALL EXPRESS ROLLS ON

● I freely admit I am one of the uncouth and ignorant many who laughed loud and long at the comic aspects of the trials and tribulations of Lieutenant Shipp in "The 8-Ball Express" [October 1959] and send along my congratulations to the author.

However, upon reading the sequel to the story, meaning the letter from Major Elam W. Wright, Jr. [The Month's Mail, February], I became filled with admiration for the writer since his letter is almost as good as the original story. To manage to use the word "I" 59 times in one letter is no mean literary achievement.

When I came to where Major (then Lieutenant) Wright, in circumstances amazingly similar to those of Lieutenant Shipp, faced with mutinous conduct of the majority of his command led by "a renegade corporal," caused them to flee the area in 30 seconds like "flushed rabbits" by merely fixing them with a determined countenance (while standing at Attention), my admiration for his literary genius changed to admiration for his skill as a humorist, and I laughed so hard I accidentally knocked my pile of comic books off my desk.

Yours for more of these hilarious episodes.

CAPT. ROY L. DAVENPORT
Fort Sill, Okla.

● Major Wright's letter could of course fan the fires regarding "8-Ball," and he has opened the door for remarks concerning Major Wright's other side. Could we leave it with "this is the first time I've heard of a saint with no sense of humor"?

LT. COL. THOMAS H. EVANS, JR.
APO 326, New York, N. Y.

FOR BATAAN-CORREGIDOR VETS

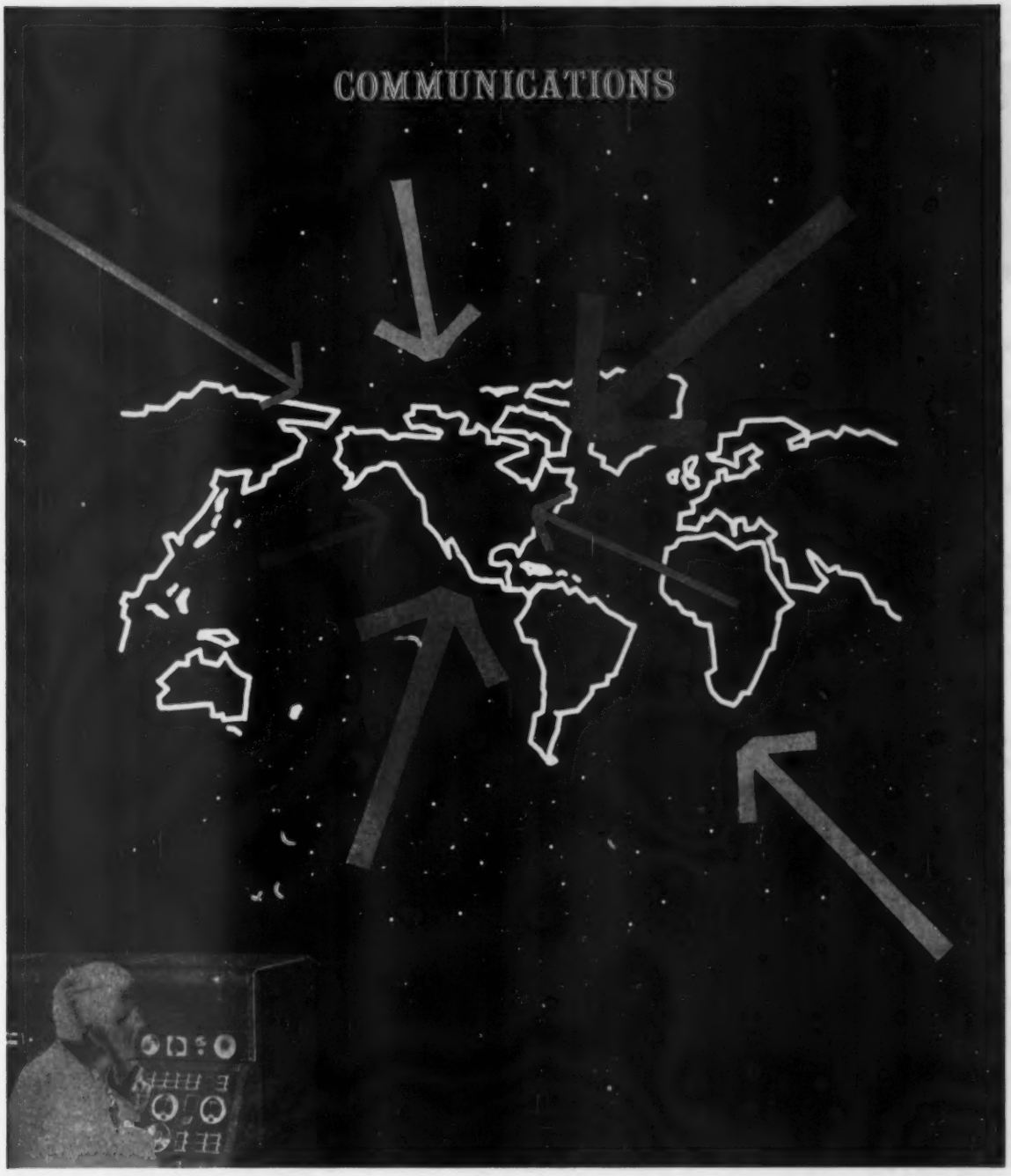
● The American Defenders of Bataan and Corregidor will hold its next convention at the Hotel Hilton in Pittsburgh, during 6-8 May 1960. Our organization also includes those servicemen who served with units of the Asiatic Fleet and in forces in the defense of the Philippine Archipelago, Wake Island, Mariana Islands, Midway Island, and the Netherlands East Indies. They too are invited to attend. For further information write Kenneth Curley, 221 Evaline Street, Pittsburgh 35, Penna.

CAPT. ARTHUR A. BRESSI
State College, Penna.

FOR 351st INFANTRY VETS

● Our regiment is in process of constructing a unit trophy room. We would be interested in obtaining any mementos, trophies, or pictures that former members of the 351st Infantry are willing to donate. In addition, we would be grateful if all articles were tagged, and a brief history of the object included. Contributions should be addressed to: Commanding Officer, 351st Infantry (AIT), 5130 W. Silver Spring Drive, Milwaukee 18, Wisconsin (Attention Unit Historian).

CAPT. CHARLES M. ALBERTY



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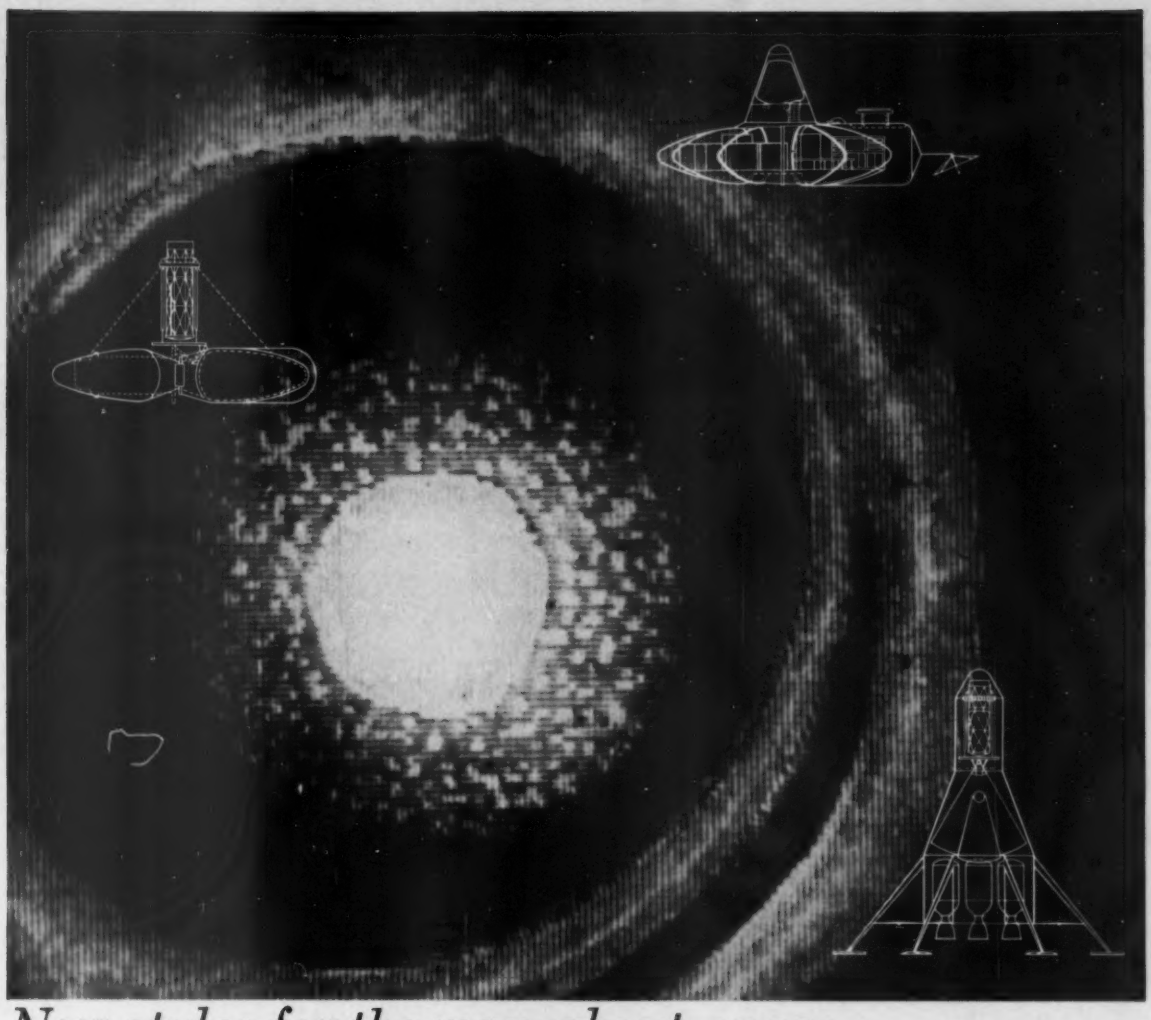

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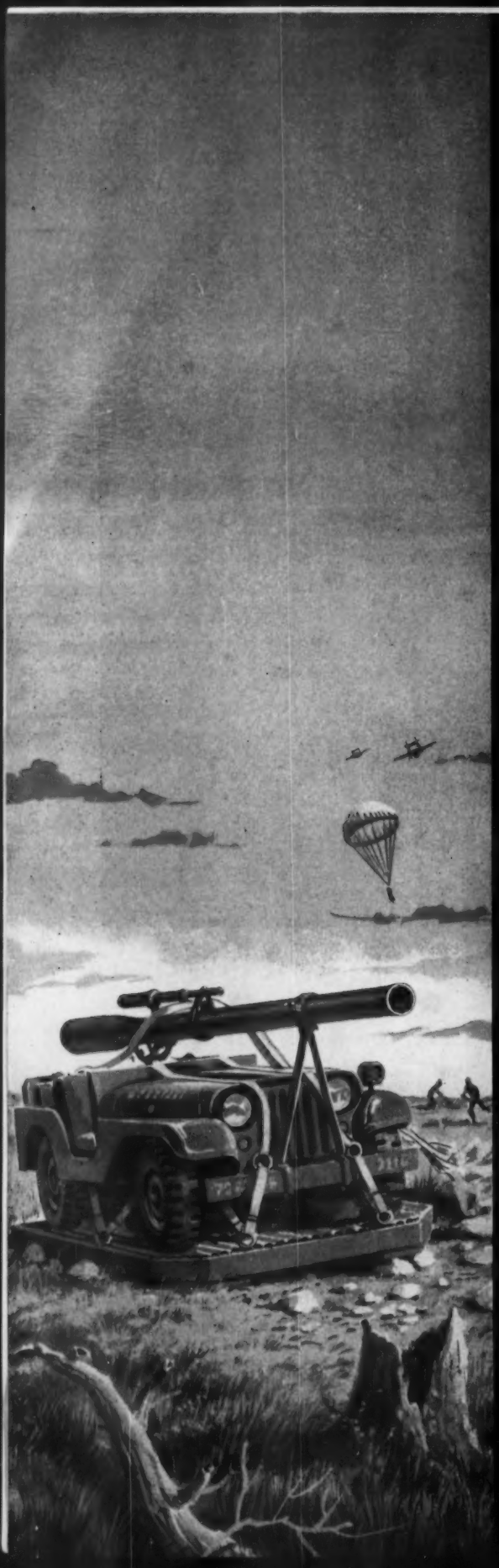

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IRRIGATION PUMPS
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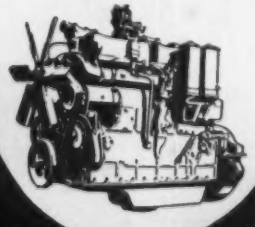
STREET FLUSHERS AND SWEEPERS
WINCHES
AND OTHER SPECIALIZED POWER EQUIPMENT



PARTS AND SERVICE EVERYWHERE

Continental Motors Corporation
MUSKEGON AND DETROIT

THE MONTH'S QUOTES

We must avoid the danger of over commitment to a single concept. That is why I say to you that we must have a modern Army; and we can no longer delay the modernization of our Army. Each day of delay affects our security.

REP. CARL VINSON OF GEORGIA
Navy League Dinner, 3 March 1960

The derogation of the authority of the individual in government, and the exaltation of the anonymous mass, has resulted in a noticeable lack of decisiveness. Committees cannot effectively replace the decision-making power of the individual who takes the oath of office. Nor can committees provide the essential qualities of leadership. Some, occasionally, serve those in authority as a device to postpone or avoid making decisions themselves; others sometime seem to spring into being because higher authority does not fully trust the judgment of the subordinate executive. But two heads are not always better than one—particularly if they are growing on the same body.

ROBERT A. LOVETT
Before Senator Jackson's Subcommittee on National Policy Machinery, 23 February 1960

We are actively studying what is, at present, a tentative set of requirements for a workhorse airplane that would meet military requirements and still provide an economically feasible means for qualified air carriers to advance in air commerce.

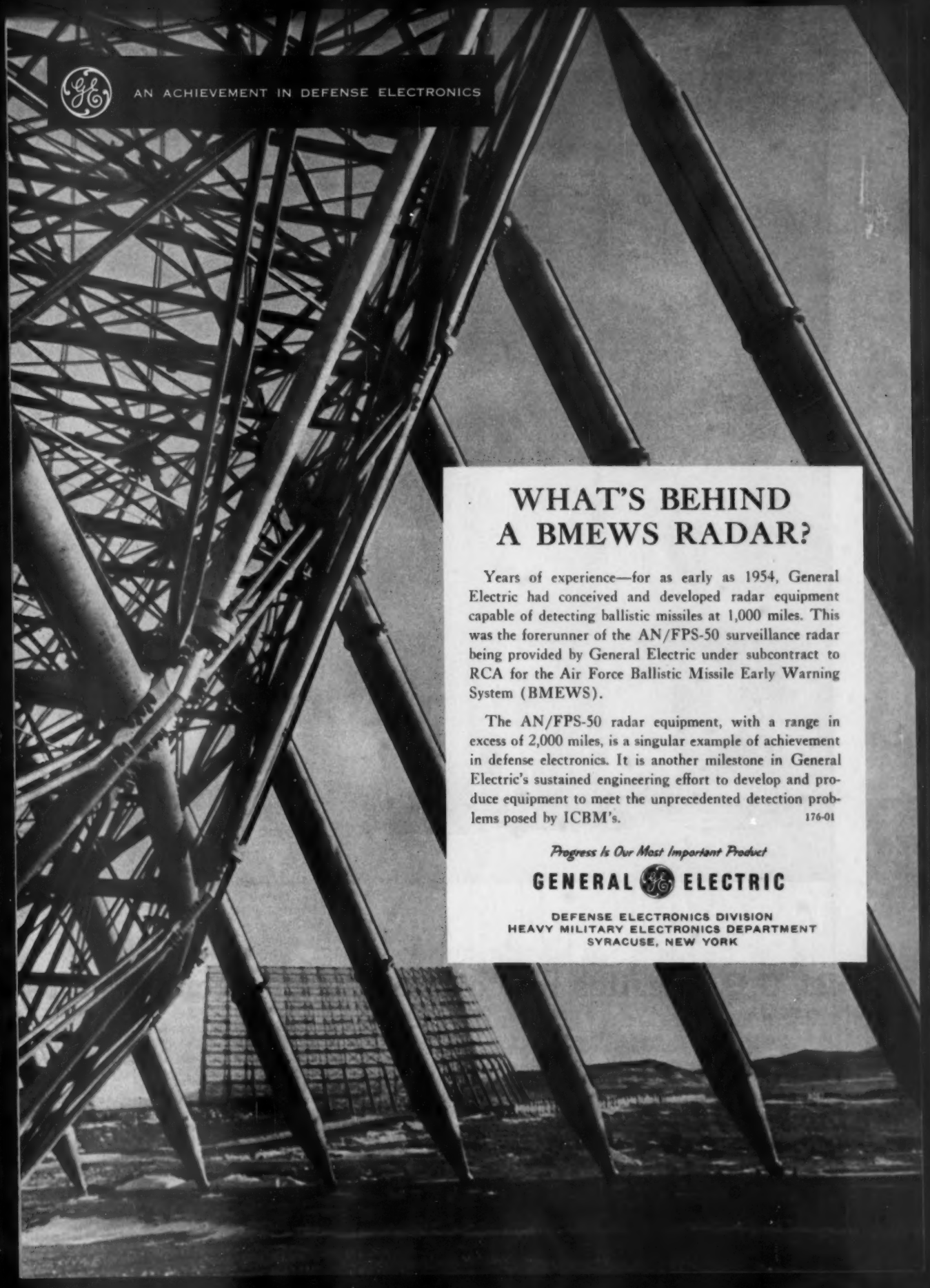
The problem here is that as you crank in military requirements—such as the ability to use unprepared fields, to take off in short distances, to engage in air drop operations, and to operate with a degree of self-sufficiency never required of commercial types—you tend to increase operating costs. This naturally lessens the interest of commercial carriers whose profit margins are directly related to operating costs. But we cannot compromise bona fide military requirements because of their impact on the operating cost problem. It seems to us self evident that there exists, within the military establishment, a place and a need for the specialized airlift our men in uniform must have.

DONALD W. DOUGLAS, JR.
Before Aviation Subcommittee of the Senate Interstate and Foreign Commerce Committee, 11 February 1960

Perhaps the most serious weakness of our system is that key officials often do not have available all the facts necessary for basic policy decisions. I have found in my personal experience that important influential men, close to the President, did not have vital information. Barriers to communication within the government are high and complicated.

Because the men at the top are busy, the practice called "briefing" is increasingly used to impart to them important information. Excessively and unwisely used, the "briefing" practice can be a serious threat to the nation's security. Even the best "briefing" is no substitute for homework. The man who does not have time to do his own reading of really basic studies and policy papers and reflecting on them has not assigned proper priorities to the demands on his time.

ROBERT C. SPRAGUE
Before Senator Jackson's Subcommittee on National Policy Machinery, 24 February 1960


AN ACHIEVEMENT IN DEFENSE ELECTRONICS
WHAT'S BEHIND
A BMEWS RADAR?
Years of experience—for as early as 1954, General Electric had conceived and developed radar equipment capable of detecting ballistic missiles at 1,000 miles. This was the forerunner of the AN/FPS-50 surveillance radar being provided by General Electric under subcontract to RCA for the Air Force Ballistic Missile Early Warning System (BMEWS).
The AN/FPS-50 radar equipment, with a range in excess of 2,000 miles, is a singular example of achievement in defense electronics. It is another milestone in General Electric's sustained engineering effort to develop and produce equipment to meet the unprecedented detection problems posed by ICBM's.
176-01
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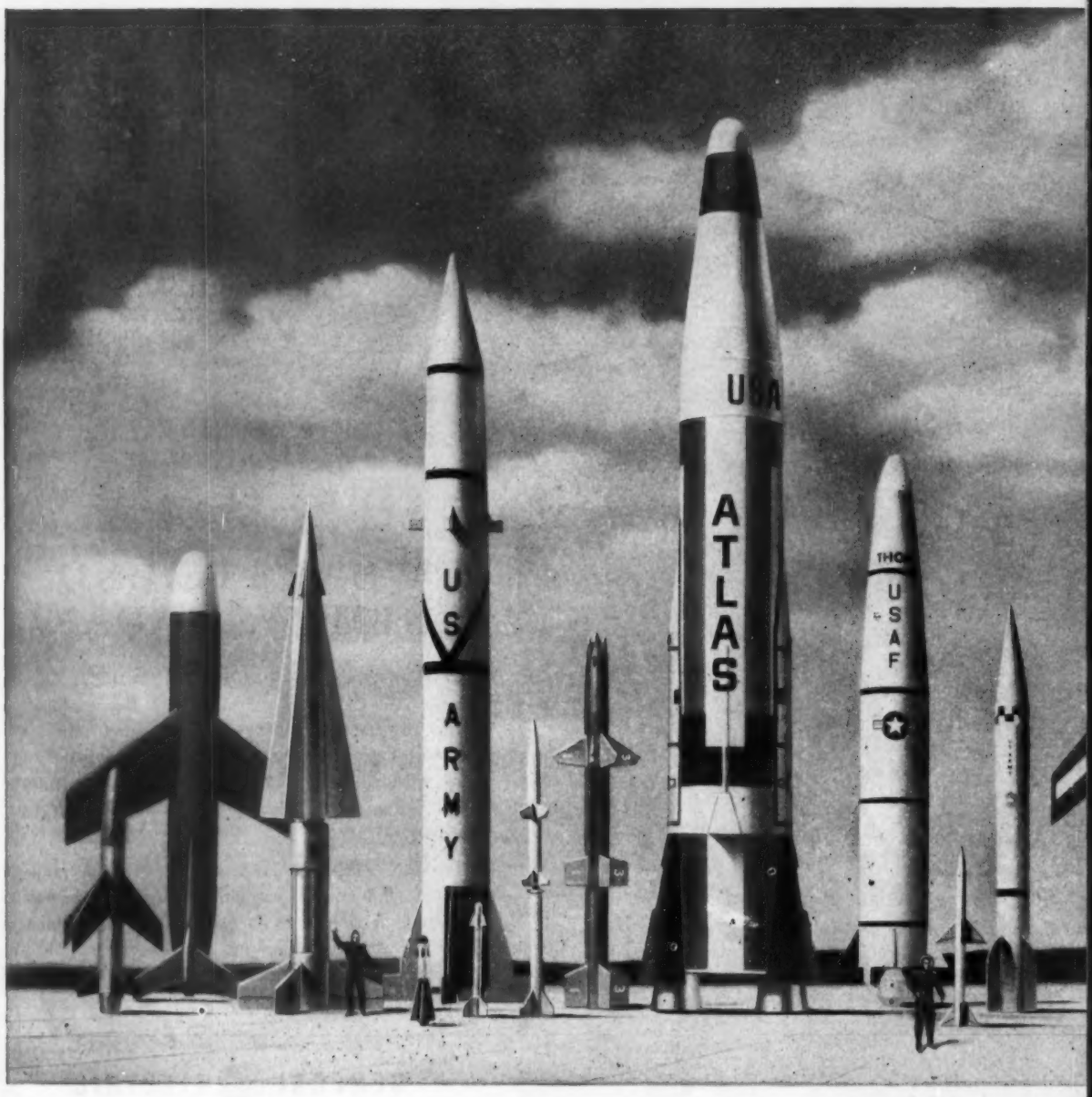
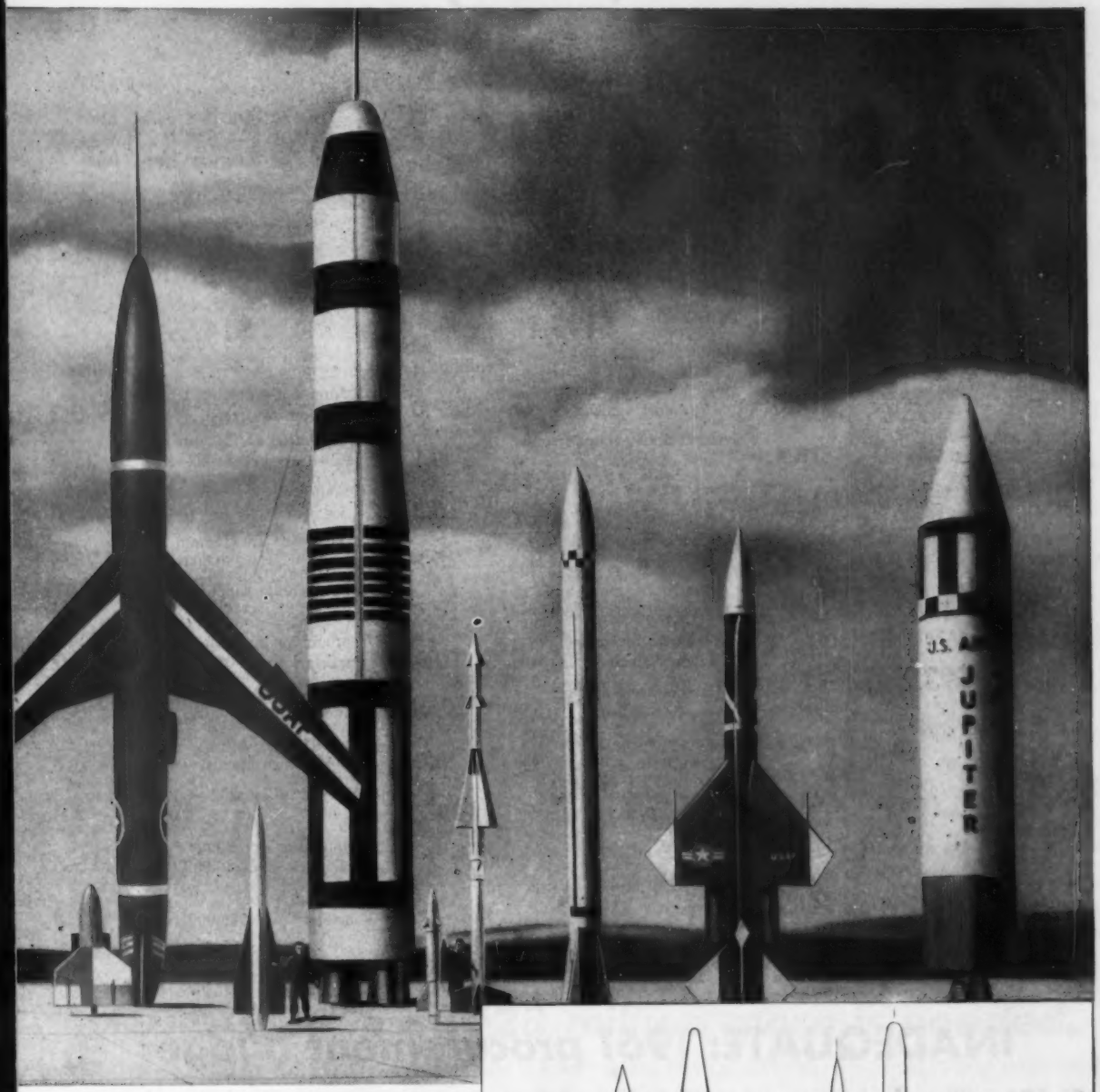
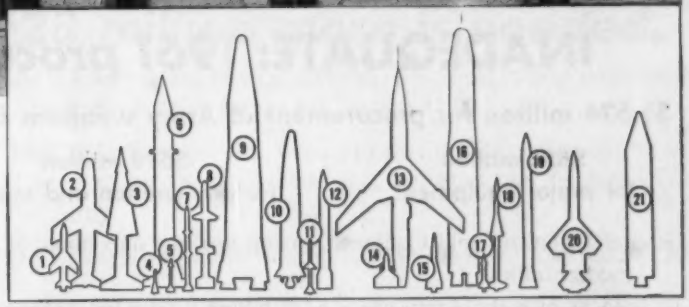
HEAVY MILITARY ELECTRONICS DEPARTMENT
SYRACUSE, NEW YORK



21 U.S. missiles rely on Raytheon electron tubes

RAYTHEON COMPANY, WALTHAM, MASS. RAYTHEON *EXCELLENCE IN ELECTRONICS*





1. **Lacrosse.** Army. Ground-to-ground. Prime contractor: Martin.
2. **Mace.** Air Force. Ground-to-ground. Prime contractor: Martin.
3. **Nike Hercules.** Army. Ground-to-air. Prime contractor: Western Electric.
4. **Falcon.** Air Force. Air-to-air. Prime contractor: Hughes.
5. **Sidewinder (GAR-8).** Navy/Air Force. Air-to-air. Prime contractors: Philco; General Electric.
6. **Redstone.** Army. Ground-to-ground. Prime contractor: Chrysler Corp.
7. **Terrier.** Navy. Surface-to-air. Prime contractor: Convair.
8. **Talos.** Navy. Surface-to-air. Prime contractor: Bendix Aviation.
9. **Atlas.** Air Force. Ground-to-ground. Prime contractor: Convair.
10. **Thor.** Air Force. Ground-to-ground. Prime contractor: Douglas.
11. **Sparrow III.** Navy. Air-to-air. Prime contractor: Raytheon.
12. **Sergeant.** Army. Ground-to-ground. Prime contractor: Sperry Rand.
13. **Snark.** Air Force. Ground-to-ground. Prime contractor: Northrop.
14. **Quail.** Air Force. Air-to-ground. Prime contractor: McDonnell.
15. **Hawk.** Army. Ground-to-air. Prime contractor: Raytheon.
16. **Titan.** Air Force. Ground-to-ground. Prime contractor: Martin.
17. **Bullpup.** Navy. Air-to-ground. Prime contractor: Martin.
18. **Nike Ajax.** Army. Ground-to-air. Prime contractor: Western Electric.
19. **Corporal.** Army. Ground-to-ground. Prime contractors: Firestone; Gilfillan.
20. **Bomarc.** Air Force. Ground-to-air. Prime contractor: Boeing.
21. **Jupiter.** Army. Ground-to-ground. Prime contractor. Chrysler Corp.

MODERNIZATION NEEDS:

BATTLE GROUP WEAPONS AND AMMUNITION

$61.6

		(millions)
7.62mm M14 NATO rifle	120,000	$14.0
7.62mm ammunition	200,000,000 rds.	18.4
Shoulder-fired assault rocket	775,000	22.5
Shoulder-fired grenade launcher	3,600	6.7

COMBAT VEHICLES AND AMMUNITION

$93.7

		(millions)
M113 Armored Personnel Carrier	600	$17.7
M60 main battle tank	300	45.0
Ammunition for tank	59,400 rds.	11.0
Infra-red fire control for tank	2,040	20.0

TACTICAL VEHICLES

$193.1

		(millions)
GOERS—Cross-country transport vehicles	300	$ 7.0
Amphibious Arctic personnel and cargo carrier	137	6.1
Tank transporter	240	16.8
Over-the-beach combat transporter	534	25.3
Armored command and reconnaissance vehicle	250	8.4
Combat recovery and repair vehicle	190	19.4
Mine detecting and clearing device	1,115	5.6
Rolling fluid transporter	945	4.8
Tactical wheeled vehicles ¼- to 10- ton	16,445	99.7

ARTILLERY AND AMMUNITION

$147.9

		(millions)
105mm self-propelled division howitzers	55	$ 5.3
Ammunition for 105mm howitzers	551,000 rds.	25.9
175mm gun	115	16.8
Ammunition for 175mm gun	250,000 rds.	23.5
81mm mobile support mortar	60	2.4
Ammunition for 81mm mortars	807,000 rds.	25.2
115mm chemical rocket and launchers	13,000	3.5
Field artillery fire control instruments	3,400	3.8
90mm recoilless rifle	1,000	2.4
Ammunition for 90mm recoilless rifle	280,000 rds.	16.8
Ammunition for artillery	335,000 rds.	22.3

INADEQUATE: *1961 procurement budget*

$1,524 million for procurement of Army weapons and equipment, divided as follows

$856 million for major equipment

$598 million for ammunition and missiles

$69.2 million for industrial mobilization

General Lemnitzer told Congress that on analysis only about $1.2 billion-plus of this can be regarded as true modernization.

To hold its own the Army needs $1.6 billion a year for weapons and equipment.

To truly modernize the Army requires $2.5 billion annually.

ADMINISTRATION'S ALLOCATION OF $1,524 MILLION FOR ARMY MODERNIZATION ADDS LITTLE TO ARMY'S RESOURCES FOR WAGING EITHER GENERAL OR LIMITED WAR

Army shows how an additional 928 million dollars in Fiscal Year 1961 will help expedite necessary modernization by buying these items of weapons, equipment and ammunition

MISSILES AND ROCKETS

$180.7

		(millions)
Expedite Pershing SSM		$17.1
Expand Hawk SAM deployment		8.6
Expedite Redeye SAM	1,200	7.8
Expand Lacrosse SSM deployment	4 Bns.	46.3
Expedite Little John SSM	600	4.8
Expedite Sergeant SSM	50	20.2
Expedite Honest John SSM and warheads	701	17.5
Davy Crockett rocket	6,247	6.5
Nike Hercules SAM overseas deployment		44.7
Antitank missile and launcher	4,233	7.2

AIR MOBILITY

$93.5

		(millions)
Mohawk surveillance aircraft	6	$ 4.7
Iroquois Transport helicopter	62	20.2
Medium troop and cargo helicopter	74	15.0
Caribou battlefield transport aircraft	36	21.3
Seminole combat command and control aircraft	19	2.9
Aerial crane (helicopter)	6	12.5
Chinook heavy troop and transport helicopter	6	9.0
Instruments for all-weather navigation	53	7.9

COMMUNICATIONS AND ELECTRONICS

$157.5

		(millions)
Field Army mobile air defense fire direction system		$40.7
Combat surveillance drones	310	23.8
Radar flight-control systems for drones and aircraft	19	6.7
Division-corps forward area communications		36.7
Electronic counter-measures for enemy artillery fuzes	45	3.8
FM command radio for tactical vehicles	3,331	21.7
Tactical generators for combat units	4,671	5.6
Battlefield intelligence analyzer		18.5

(From pages 782-783 of Hearings of the Subcommittee of the Committee on Appropriations)

QUOTES: *why $928 million more is needed*

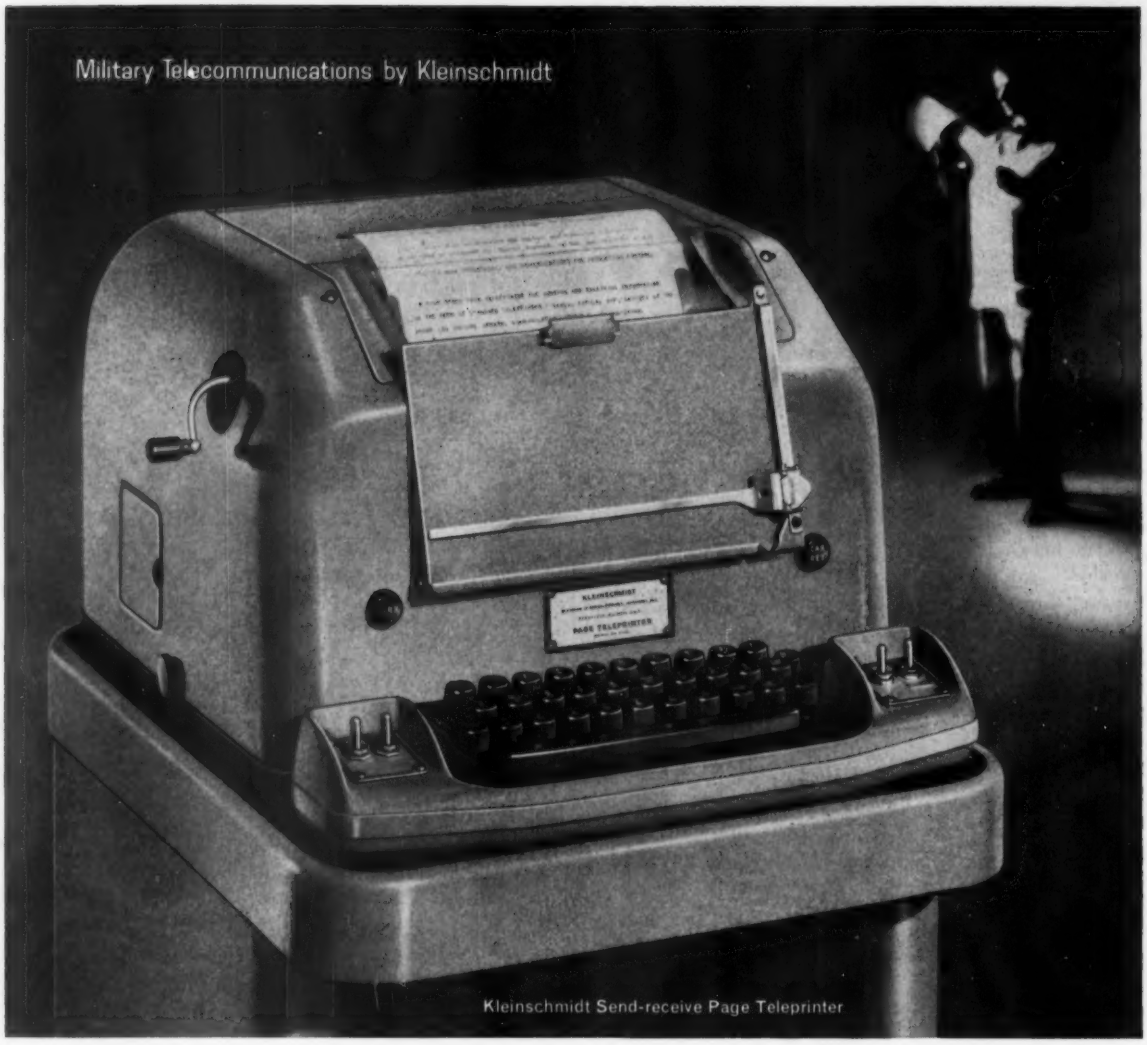
REP. JOHN J. RILEY OF SOUTH CAROLINA: If I understand these statements, it is going to take many years to even get the most elementary modern equipment for the Army. Am I correct?

SECRETARY OF THE ARMY WILBER M. BRUCKER: That is right. We asked that it [modernization] be accelerated because it will take from 3 to 7 years to get the basic items . . . the rifles, the machine guns, the tanks, and the armored carriers for the Army.

REP. MELVIN R. LAIRD OF WISCONSIN: Do I understand those were things cut off from your modernization program?

SECRETARY BRUCKER: Those were things for which we requested a greater amount. We got some . . . but we did not get the number that we desired in the 1961 budget.

(From pages 449-450 of Hearings of the Subcommittee of the Committee on Appropriations, 28 January 1960)



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Policy Making for Survival

A Senate subcommittee is engaged in looking into the vital question of whether our government is now properly organized to meet Mr. Khrushchev's many challenges

RECENTLY a subcommittee of the Senate Committee on Government Operations, under the chairmanship of Senator Henry M. Jackson of Washington, began hearings to determine, in the Chairman's words, "whether our government is now properly organized to meet successfully the challenge of the cold war. How can a free society organize to outthink, outplan and outperform totalitarianism—and achieve security in freedom?"

In an era of big government and with defense the biggest part of it, the importance of effective policy machinery in the field of national security cannot possibly be overemphasized. Unless we know where we are going, and our reasons for going there are based on adequate sound and objective information, we will indeed be lost. For these reasons such an examination as the subcommittee has undertaken can be most valuable.

In launching the hearings Senator Jackson put these questions to the committee and its witnesses:

"What can our government do to move more speedily on crucial scientific and technical programs—any one of which can radically affect the world balance of power? Here I have in mind the delays in such vital projects as the hydrogen bomb, satellites, and the intercontinental missile.

"What can we do to help the statesman and the soldier work together for common goals? Here I have in mind the commonly acknowledged problem that the State and Defense Departments often make plans with the left hand not knowing what the right hand is doing.

"What can our government do to develop a truly integrated national strategy for the long pull? Here I have in mind the question of how the National Security Council and its subordinate bodies can develop policies representing more than least-common-denominator compromises between the departments represented upon it.

"How can the budgetary process be made a better management tool for clarifying, illuminating and speeding the development of needed programs? Here I have in mind the widespread feeling that many important programs are still-born because of the money agencies.

"What can our government do to recruit and retain outstanding senior officials for national security posts? Here I have in mind the chronic difficulties of the Defense Department and other agencies of finding qualified men—and even more important, holding them long enough to master their jobs."

AMONG the witnesses in and out of government called by Senator Jackson to discuss these questions were former Defense Secretary Robert A. Lovett and Robert C. Sprague, a former government official and White House consultant. Both expressed trenchant views on past and present practices and both had some strong recommendations. Not surprisingly they didn't exactly see eye-to-eye on everything. But they did agree that we can and must do better than we have in the past.

The delays in making and executing national policy are largely caused, Mr. Lovett believes, by the "foul-up factor" in government—the practice of concurrences and of inviting argument between conflicting interests in and out of the government. He thinks this may be getting out of hand and has been expanded to the point "where mere curiosity on the part of someone or some agency and not a 'need-to-know' can be used as a ticket of admission to the merry-go-round of 'concurrences'."

Mr. Lovett believes that adequate policy-making machinery exists within the Department of Defense since there are the "competent and specially-trained

military officers with which the Department of Defense has fortunately been endowed for some years." He stressed the importance of the Defense Department being strictly "nonpolitical and nonpartisan." There are, he said, still far too many committees in the Pentagon and this has bred the evil of excessive staffs. He mentioned the problem of too rapid a turnover of civilian executives, suggesting that a man doesn't completely master his Pentagon job until after two years and by that time he is more often than not gone or planning to go.

Finally Mr. Lovett objected to the idea that there is something wrong with the Joint Chiefs of Staff issuing a "split paper." "It is vitally important to a Secretary of Defense, as one of the advisers to the President, with a special responsibility, to know what the alternatives are to a course of action, or what serious obstacles to a proposed program are foreseen by a responsible Chief of Staff, so that, in reaching a decision, he will be possessed of all the facts available."

This is indubitably true. And while it is also true that there are "competent and specially-trained military officers" in all of the services, unfortunately the best minds among them have not always been listened to in the last dozen years. There have been times when a "yes" attitude was more to be desired than trenchant and objective analysis. When this situation exists split papers are indeed an embarrassment.

MR. Sprague, as befits a banker and industrialist, emphasized the economic factors involved in national security policy making. But he also spoke out strongly against conditions that inhibit officials from having all the facts that are available in making policy decisions. "I have found in my personal experience," he said, "that important and influential men, close to the President, did not have vital information." He would liberalize the "need to know" rule and at the cost, presumably, of requiring more of the concurrences deplored by Mr. Lovett.

Mr. Sprague's comments on the economics of defense were so clear and provocative that they are quoted almost in their entirety here:

"Our figures indicate that Russia's gross national product has been growing at a rate of 6.5 per cent a year—twice our rate.

"Her massive military machine has been built with a GNP less than half that of the United States. Russia could do this only because she was willing to put some 25 per cent of her GNP into the military sector, as against some nine per cent of our GNP going for the same purpose.

"We seem to have accepted a policy limitation that we are not going to put more than about 40 billion dollars a year into our military effort. In 1957, when the Soviet GNP was 20 billion less than it is now, their effort approximately equalled ours.

"There is no solid basis to argue that the Soviet economy will not continue to grow at its present rate. We cannot assume that they won't continue to plough at least 25 per cent of their GNP into military effort as they have been doing for the past eight to nine years. And they will still have enough left to meet minimum domestic needs and wage economic warfare abroad.

"If, for the ten years ending in 1967, Russia continues to increase her military position by 6.5 per cent per year—while ours remains fixed at 40 billion dollars per year—then we will obviously fall far behind in relative military strength.

* * *

"All of us know how the total budget has always been prepared—except in shooting wars. First a budget ceiling is determined. This rests upon a judgment about national income, taxes and federal debt, and the most recent levels of government expenditures.

"Once the total budget ceiling is set, the more or less fixed costs of domestic programs are subtracted. What is left is available for national security. Only in time of shooting war do we begin by asking: 'What do we need?' The rest of the time we tailor the defense program to fit the budget. The ceiling is usually an arbitrary judgment figure.

"The point I am trying to make is that whatever this country really needs to do, this country can do. This may involve implementing an effective nationwide fallout shelter program to save 40 to 60 million Americans if we are attacked; or 'hardening' and protecting SAC bases and planes so they won't be destroyed or rendered unusable by relatively low overpressures and fallout from near misses of nuclear weapons. It may mean maintaining an airborne alert of B-52 bombers to insure SAC's ability to retaliate massively, or acquiring greater limited-war capabilities than we now have, or some appropriate combination or extension of such measures. It's just utter nonsense to believe that we can't do the things that we need to do to survive, to win this contest. We can't be sloppy about it or careless about it; we can't do the same thing several times over, but we certainly can do all the things that *need* to be done to *assure our survival* and *to assure winning.*"

SENATOR Jackson's subcommittee has heard other "expert" witnesses in and out of Government. The open testimony of Messrs. Lovett and Sprague is only the beginning. If the subcommittee keeps its investigation on the high level of fact-finding that it has started in this election year (and there is every indication that it will) the final report may well be a state document of great importance to the future of our nation. Policy making machinery is a misnomer; men must make decisions and guide our national endeavors to fruitful ends. And as Mr. Lovett said in his closing remarks it is most important that these men have a destination clearly in mind before they start out.

Airlift in Action:

"Ski-130" lands heavy cargo on both Polar Icecaps

—a "Feat of Hercules" unmatched by any other plane

A dramatic new phase of the U.S. Navy's *Operation Deep Freeze 60* began with the recent landing of a ski-equipped Lockheed C-130 HERCULES at the South Pole—after a 770 mile flight from McMurdo Sound, Antarctica.

The huge 62-ton "Ski-130" which accomplished this historic "first" is one of seven U.S. Air Force Tactical Air Command prop-jet HERCULES transports—all ski-equipped—assigned to assist the U. S. Navy in support of the United States scientific effort in Antarctica. Recognizing the advantages of this go-anywhere, haul-anything airfreighter for *Operation Deep Freeze 60*, the Navy has ordered four "Ski-130s" of its own.

The Jet Age airlift provided by these C-130s will make possible the improvement of buildings to house the expedition's scientists and equipment—thus expediting the entire program. It has been estimated that a full year in time may be saved. In addition, costly breakage of delicate equipment and supplies, previously dropped by parachute, will be eliminated—at an estimated saving of $1 million.

Only a few months ago these same TAC "Ski-130" sky giants transported 26 million pounds of construction equipment and materials—and more than 1500 workers—to Distant Early Warning sites on the Greenland Icecap. This record-breaking Arctic airlift was completed well ahead of schedule.

Now in flight test: the new Boundary Layer Control version of the C-130 HERCULES, which will operate from extremely short, unimproved runways.

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United Research Corporation of Menlo Park, a subsidiary of United Aircraft Corporation, announces it has changed its name to

UNITED TECHNOLOGY CORPORATION

Objectives of this company have evolved to encompass not only research but also development work in the fields of solid and liquid propellants through complete qualification of rockets and of advanced propulsion systems.

The new name — with its emphasis on "technology" — clearly defines the scope of the activities being undertaken.

Construction of two multi-million dollar permanent facilities to implement the objectives of the corporation is now underway. A Research and Engineering Center is being built on a 25-acre site in Sunnyvale; a Development and Test Center in the foothills some 10 miles southeast of San Jose, California, in the prime living area of the San Francisco Peninsula.

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THE ARMY'S MONTH

MediCare Program Expands. After 1 July, medical care for service families will be increased by over 500 patients a day, the Senate Military Appropriations Subcommittee has been informed. Civilian hospitals will handle about 3,500 cases per day during the upcoming fiscal year, compared to about 3,200 during the current fiscal year. Military hospitals will increase their capacities to more than 9,700 patients from the about 9,470 registered in the current fiscal year. The increases were outlined by Brig. Gen. Floyd L. Wergeland, MC, USA, Armed Forces MediCare Executive Director, who said the program is now "sound and stabilized." He said the number of family members eligible under the program will rise to 3,738,700 during fiscal 1961, an increase of over 200,000 since 1959. Gen. Wergeland said the cost of the program—which for fiscal 1961 will be $71.6 million—will continue to increase "as the military dependent population grows."

Duty Prone. Lieutenant Arvid H. Jones of Sleepy Eye, Minn., hasn't missed a scheduled drill or summer encampment of Battery A, 4th Howitzer Bn., 31st Artillery, since this Army Reserve outfit was organized in October 1949. Now Executive Officer of the Battery, Lt. Jones joined it as a sergeant and received a direct commission in June 1950. For his ten years of faithfulness he was recently awarded the Armed Forces Reserve Medal.

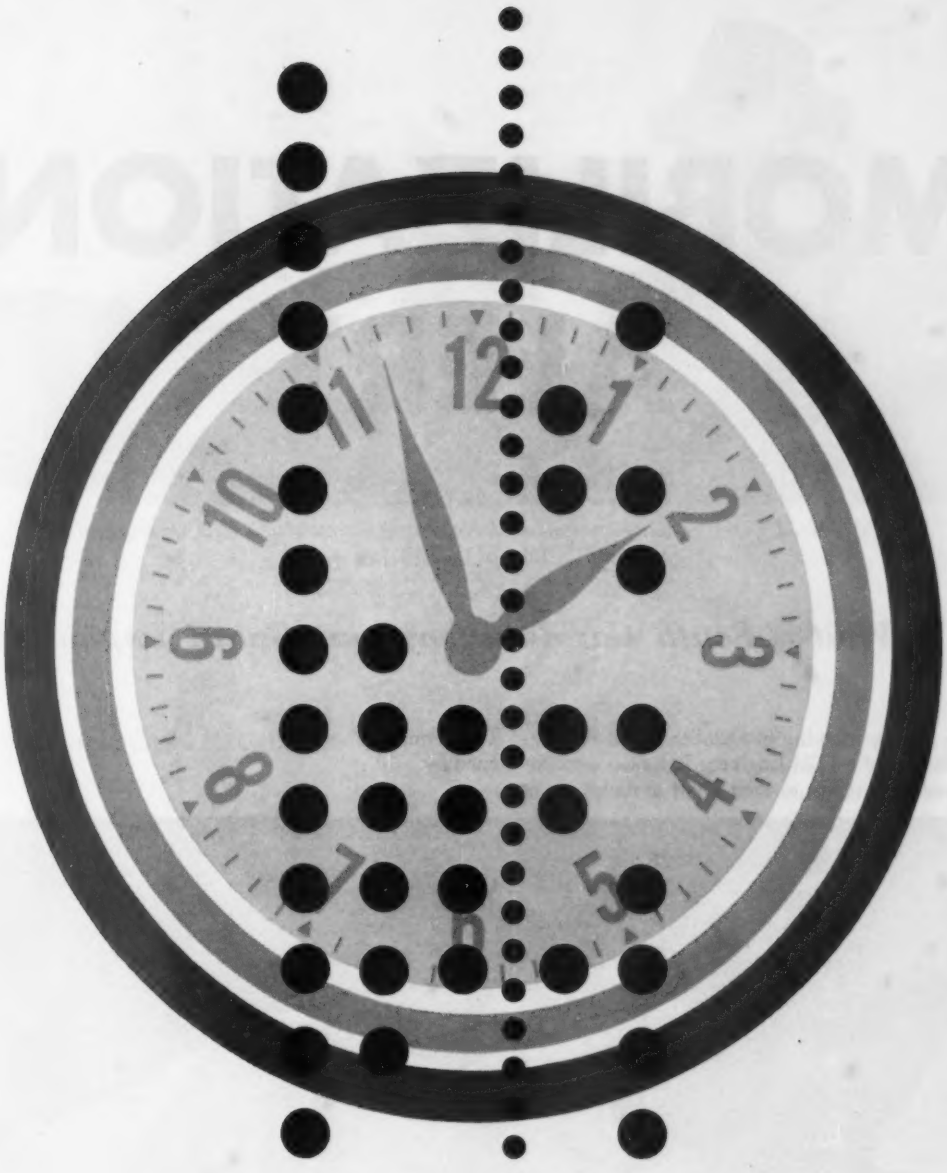
Modern Arms for Eighth Army. The Eighth Army in Korea hopes for a "major improvement" in the modernization of weapons within the current calendar year, Gen. Carter B. Magruder, Eighth Army Commander, revealed.

Missile Notes. Two Lacrosse guided missile battalions, involving about 400 officers and men, will be sent this year to the Seventh Army in Germany, marking the first overseas deployment of these surface-to-surface guided missile battalions. The two battalions, whose weapons are designed for close support of Armor and Infantry troops, are the Fifth Missile Battalion, 42nd Artillery, and Fourth Missile Battalion, 28th Artillery, both stationed at Fort Sill, Okla. Other Army missile units with the U. S. Army in Europe are the Nike, Honest John, Corporal, and Redstone.

Supply Management Seminars. Reserve component officers with a special interest in or need for training in the Army supply system may be eligible for supply management seminars which will be conducted during July and August at Fort Lee, Va., and at the University of California, Los Angeles. This year, the first and third seminars (10-23 July, 14-27 August) will be held at Fort Lee with the second (31 July-13 August) in Los Angeles. USAR officers in the grades of colonel, lieutenant colonel, and major are eligible to apply for attendance at the seminars. Full information can be obtained by writing directly to the Commandant, U. S. Army Logistics Management Center, Fort Lee.

Trophy for Nike Unit. The Commander's trophy, awarded annually by the U. S. Army Air Defense Command to the nation's best Army National Guard air defense unit, this year went to a Nike-Ajax unit, the First Missile Battalion, 202nd Artillery of the Illinois National Guard. Chicago was named the winner by Lt. Gen. Charles E. Hart, CG, USARADCOM.

West Coast Seminar. A National Strategy Seminar at Asilomar, Pacific Grove, Calif., April 24-30, sponsored by Sixth Army, to increase public awareness and understanding of the major issue confronting the Allied powers will be attended by approximately 500 persons including representative civilian leaders from the eight western states and selected Reserve, National Guard and active duty officers. AUSA is participating.



TAPE AND MICROSECONDS

are essential to missile development. Instruments must record every function against time... in fractions often finer than one ten-thousandth of a second. Reams of electronic and optical data must be collected, reduced and evaluated before any missile can become operational. Vitro designed, built and helped instrument the Air Force missile test center at Eglin Air Force Base, Florida. Today it operates the center's test ranges and tracking stations throughout the Southeast. At Eglin, Vitro and the Air Force, working as a team since 1952, are responsible for checkout of missiles, rockets, weapon systems, countermeasures, space probe vehicles and bombing techniques. Beyond this Florida site, other Vitro capabilities: underwater (torpedo) and electronic environmental ranges.

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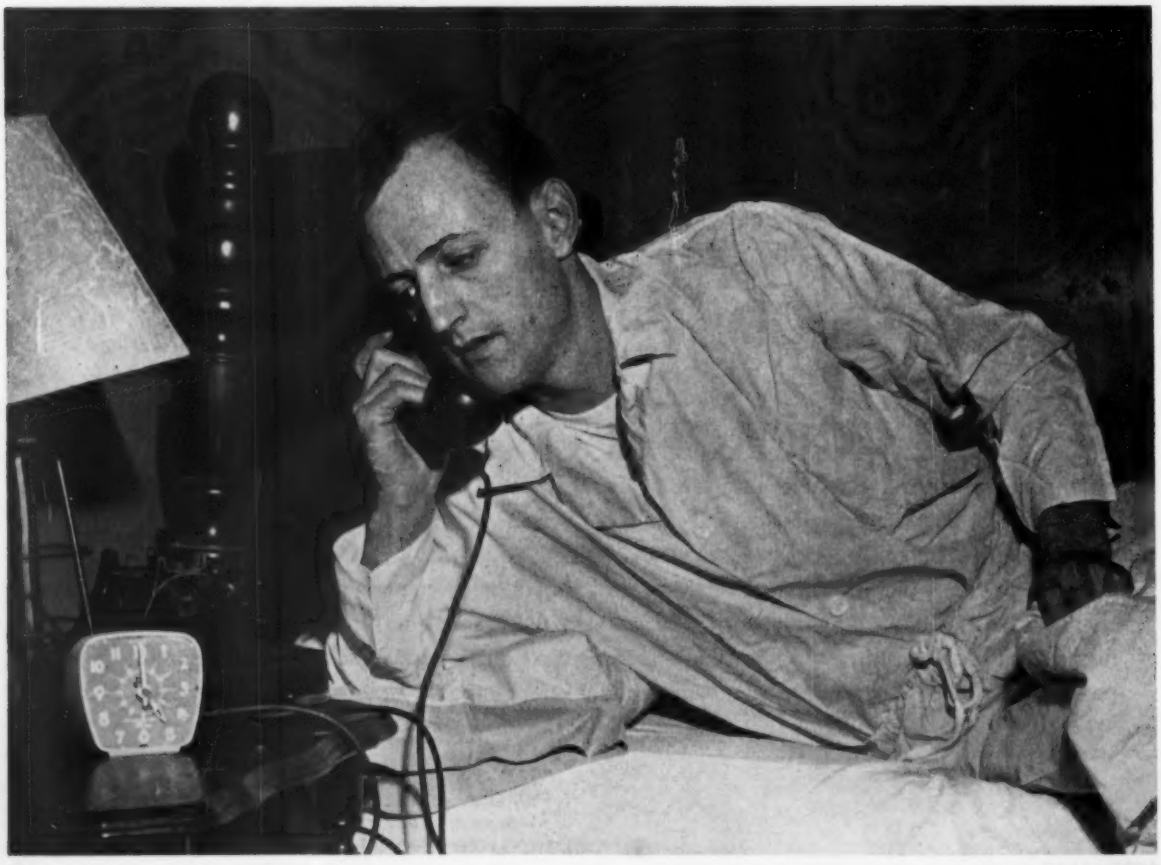
MOBILIZATION ALERT

What a South Carolina National Guard Engineer outfit

At 0500 on a rainy morning in October, Capt. Raymond Timmerman, Jr., and other members of the 122d Engineer Battalion were awakened by telephone orders to report to their home armories at once



At Edgefield local Guardsmen were alerted by a siren operated by Fire Chief R. N. Carley and Mayor David L. Tompkins

learned about its readiness when it received an unannounced alert

Colonel JOHN H. GIBSON

NOT long ago I witnessed the emergence of realistic mobilization training—from the planning shell in which it has been long contained.

During the pre-dawn hours of 10 October 1959, citizens and Army Guardsmen in the vicinity of Edgefield, South Carolina, awakening to the electrifying cry, "Enemy attack!", threw off their comforters and grabbed their socks.

This, believed to be the first bona fide unannounced "Mobilization Alert" since wartime, was issued to the 122d Engineer Battalion of the South Carolina Army National Guard.

The battalion commander, Lieutenant Colonel Robert L. McCrady, of Columbia, said he planned and instituted the unannounced operation in order to check his unit's alert and mobilization plans and to determine the combat readiness of his troops in the face of an alert with no prior warning.

Colonel McCrady said that while his battalion previously had participated in practice alerts, he felt that those pre-warned operations lacked realism. The need for sudden decisions required during combat equally demand peacetime practice.

During our current time of peril, situations that could dangerously impair combat readiness must vigorously be sought out and eliminated. Colonel McCrady moved to eliminate existing weaknesses. He succeeded in injecting realism into what might otherwise have been a routine affair—a mere counting of heads. Many important training lessons were developed. Potentially dangerous situations were brought to light. All unit commanders involved were impressed with the importance of maintaining realistic, workable alert and mobilization plans.

The South Carolina alert went something like this:

0430 hours. Officers and men of the 122d Engineers were sleeping in warm beds after a normal day's work at their usual civilian occupations. A steady rain throughout the day before and that night had made things rather chilly—and very wet. All in all, a good night for sleep.

0500 hours. Officers and unit commanders were roused from their sound slumber by telephones and messengers and were given this communiqué from their commanding officer: "This is a practice alert. There has been an enemy attack just across the Savannah River, in the vicinity of Thomson, Georgia. Enemy airborne troops are advancing toward Aiken, South Carolina. Alert and mobilize your unit and assemble at the armory for further orders."

84 per cent of the Guardsmen showed up

Unit commanders went into action and sounded the alarm in accordance with their preconceived alert plans. When the alerted units had reported to their home armories at Edgefield, Johnston, Saluda, McCormick and Warrenville, commanders were given sealed orders. They were directed to proceed to the

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attack point and support the operations of the 51st Infantry Division, which was in position along Stevens Creek in Edgefield County.

These orders included special instructions to report to the battalion S1 each unit's strength at 0700 hours, at 0800 hours, and at time of departure. By two hours after the alert, 52.32 per cent of the battalion's aggregate strength had reported for duty. Five hours after the alert had been sounded, 84.03 per cent of the Guardsmen had responded to the emergency call.

Distances to the attack point varied. Headquarters and Headquarters Company traveled eight miles. Company B had the longest move—35 miles.

All units involved closed in the assembly area prior to 1200 hours. Upon reaching the bivouac area, they established command posts and engaged in those engineer tasks the initial operations order had directed.

Realistic assignments included road maintenance, road building, culvert installation, and setting up a comprehensive tactical barrier.

All units continued to operate throughout the day and night of 10 October. At approximately 0800 hours on 11 October, they were issued orders to return to home stations.

Lessons of the alert

Here are some of many vital training points highlighted during the operation:

Vehicles stored at unit armories must have full gasoline tanks.

Troops preparing for defense of our nation or for civil emergencies must have small-arms ammunition immediately available. Limited stocks of this type of ammunition should be in armories.

Emergency rations must be on hand for use until other types can be obtained.

Police helped Guardsmen establish traffic control points as provided by the battalion's previously proposed alert plan.

The grocer isn't under arrest. He's just startled at the size of the order made out long in advance as part of the battalion's alert plan.

Alert plans must never count on availability of civilian communication facilities. During this alert, only one telephone was available in each armory and only one long-distance operator was on duty at the time of the alert. Understandably, civilian telephone service became snarled. Commercial radio and television stations were not on the air when the alert sounded. On one occasion, an officer who called a radio station was told to call back in a few minutes. The announcer was doing a commercial!

The personal contact system, using area leaders, is the most reliable notification method. This alert disclosed that unit commanders who used this method had a larger percentage of their personnel report for duty.

Advance reconnaissance parties must be sent out to reconnoiter areas.

In all cases, proper loading of equipment must receive a high priority in the planning and execution of an alert.

Alert plans directed units to move as soon as possible and in any circumstances not later than 0930. It is more feasible for units to move out when a fixed percentage of its personnel have assembled at the armories.

It must be observed that, once the shock of the early morning alert had worn off, the 122d Engineer Battalion began to function in a most commendable manner. Assignments were realistic, and constituted an important training medium.

Since no plan is perfect, there were mistakes. Most significant was the fact that they were not of the type that are correctible during training. This was the first truly surprise "mobilization alert" of an Army National Guard unit in South Carolina, and possibly in the entire nation.

The meaning of the alert

The United States Army cannot afford to overlook any good bet in its mobilization planning. The One Army concept can be advanced through mutual cooperation and recognition of distinctive but interlocking training roles. Guard units, the Minutemen, strategically located in every city and hamlet, form a logical first line of defense for our nation in cases of local or national disaster. They can lead the way to national security.

The realistic M-day training I observed indicates that the 122d Engineer Battalion has set a pattern for success in training and victory in combat. It has discarded the mediocre concept of a two-hour training week. These Army National Guardsmen have revived the tradition born of fighting men at Lexington. In the space of minutes, they traded home and hearth for wind and rain, rifles in their hands, an attack order as their guide. This is the action and swift reaction that can win battles in an era when speed dominates the battlefield and nuclear weapons set the pace.

In their concept of training, officers and men of the 122d Engineers have substituted surprise for routine, action for words. They have broken through resistance and repetition and planted the security of this nation on a solid training base.

Mickey Finn on the battlefield

Some facts about chemical agents that can knock out an enemy without killing him

Col. Donald E. Yanka

THE concept of non-lethal incapacitating chemical agents is not entirely new. Of the 46 chemical agents used during World War I, only five were truly deadly. A study reveals that one third of all U. S. casualties during that war were caused by gas. However, only two per cent of these died, compared to 25 per cent who died from the effects of other weapons.

After World War II the potentials of non-lethal chemical compounds were not seriously considered. Attention was focused on the newer, highly devastating weapons. Such preoccupation is not unusual, as an incident from World War I will illustrate.

A British chemist suggested using mustard gas in 1915, two years before the Germans resorted to that gas in battle. "Does it kill?" he was asked. "No, but it will disable enormous numbers of the enemy temporarily." "That's no good to us," he was told. "We want something that will kill."

However, during the past five years, the U. S. Army Chemical Corps has been spurring its study of new drugs and compounds which are truly disabling; that is, agents that temporarily disable large groups, but these people will recover with no harmful long-term effects. One of the difficulties, of course, is to define what would be a military casualty in these terms.

The significance of incapacitating agents is worth serious thought. The possibilities of nuclear stalemate, and the probability of our being forced into limited wars require a new look, especially at how to fight in areas that may be occupied by our friends.

Chemical warfare offers a possible solution. Unlike nuclear or high-explosive warheads, which destroy or maim both men and machines, chemical agents affect only man and not his resources. Furthermore, while lethal chemical weapons destroy humans, incapacitating agents disable them only temporarily. Consequently, they can be used in areas where friends and ene-

Colonel Donald E. Yanka, Chemical Corps, commands the Army's Chemical Warfare Laboratories.

mies have become mixed.

An incapacitating compound can be described generally as one which, when delivered in an effective dose, disables a soldier from performing his duties for a militarily significant period, but which will allow him ultimately to completely recover without medical aid. Some chemical compounds become effective after various times and remain effective over varying periods. For example, incapacitation may begin after seconds of exposure and last only until those exposed get back into fresh air. On the other hand, the onset of effect may take from minutes to an hour, and the period of disablement may range from one to three days.

Disabling chemical compounds fall into two broad classes: those which temporarily immobilize the mental faculties—in effect, neutralizing a person's will to resist; and those which produce physical distress for a significant period, such as severe discomfort, anesthesia, paralysis, or immobility.

An example of how an incapacitating agent works on the mental faculties is the famous performance of the drugged cat. The effects of this psychochemical completely changed the natural antagonism of this cat toward a mouse. As the drug wore on, the cat's character completely reversed. Highly terrified, it cringed and leaped about in the cage to keep its distance from the mouse.

Knowledge of a number of compounds of this type has become universal through published medical and chemical scientific literature. A derivative of lysergic acid (LSD-25) is the only one so far announced in this country. However, to show that we have no monopoly, Major General Drugov, of the Soviet Union's Military Medical Service, has said: "Special interest attaches itself to the so-called psychic poisons [mescaline, methedrine, lysergic acid derivatives] which are now used for simulation of mental disease."

However, experimental work with this type of material is still in the early stage. The military potential of these compounds, as well as methods for providing effective protective measures against their possible use on us, must be adequately explored.

These so-called psychochemicals, causing effects that resemble psychosis, or that serve as stimulants, tranquilizers, or sedatives, can produce psychological incapacitation. The manner in which disability is achieved, however, may be immaterial to a commander who is interested only in military immobility. He may desire different forms of incapacitation to fit certain tactical or strategic conditions. For example, if we can impair a man's ability to integrate time and distance, it could seriously interfere with his landing an aircraft, or firing a gun from, or at, a moving vehicle. On the other hand, a more subtle and less recognizable incapacitation perhaps might be more important if it impaired the effectiveness of a trained unit by transforming it into a disorganized group who would no longer obey orders or would obey them incorrectly.

However, psychochemicals are not the whole story. In some instances they could be the lesser story. Physically incapacitating compounds could also be used, perhaps to better advantage, in many situations. Since a soldier must think, see, hear, stand, lie, or move as needed, and work with his weapons or tools, it is possible to render him ineffective by interfering with any one of these physical functions. For example, severe watering of the eyes, as produced by tear gas, is a mild form of physical disablement. Other compounds are known which irritate the lungs, temporarily lower the blood pressure, induce severe vomiting, disturb body temperature, physiologically impair vision, or bring on involuntary bowel movement or temporary anesthesia. In battle these effects, in contrast to those of the psychological agents, are truly immobilizing since they produce an effect that is militarily measurable. Anesthesia or lower blood pressure may ultimately prove to be the most useful, since they physically immobilize an enemy.

While many compounds are already known which have incapacitating capabilities, these characteristics in themselves do not necessarily make them suitable for military use. To be significant in a military use, and to permit economy in employing them, they must produce their effects through very small doses. While the disabling dose should be very small, one which might result in permanent disability must be larger by many orders of magnitude. This is a significant characteristic that distinguishes incapacitating compounds from lethal agents. We must also be able to produce these materials in large quantities at relatively modest cost, from resources available to the United States. Further, the supply of materials must be constant over a significant period, since they must be on hand for immediate use when the need arises. It is also highly desirable that these compounds be difficult to detect by smell or sight, to protect against, and to counteract by medical treatment.

Since we do not now, and may never, know exactly what an enemy is going to use against us, or when, a program of surveillance, research and development is vital, regardless of the ultimate role that incapacitating agents may assume. Necessarily, some of this work cannot be made public at this time. It is clear, however, that our build-up of adequate defenses inevitably must be based on knowledge of all types of compounds that might possibly be used against us; how they act on the human system; how they might be disseminated; what means we can develop to obtain warning and detection of their use; how we can protect ourselves; and what antidotes or treatments can be developed for on-the-spot first aid that will pharmacologically reverse the process at will and defeat the enemy's purpose.

There is a definite military use for incapacitating agents. The Army's Chemical Corps is endeavoring to provide our country with adequate means of protection against such chemical weapons.

The Paradox of Fontenoy

THIS FAMOUS PAINTING OF AN 18th CENTURY BATTLEFIELD REVEALS SIGNIFICANT TRUTHS TO TODAY'S TACTICIAN.

WHAT DOES IT MEAN TO YOU?

Master Sergeant FORREST K. KLEINMAN

HANGING on a wall of the Casemate Officers' Club at Fort Monroe is a painting of an ironic paradox. Though the paradox is neither new nor nuclear, the painting is an appropriate conversation piece for the nuclear-age planners of Headquarters U. S. Continental Army Command who comprise most of the Club's membership. For its military implications are as up to date as the Zero Ground Pressure Vehicle.

The scene is the battlefield of Fontenoy, 11 May 1745. Two officers—one British, one French—are met between their opposing lines of troops. With elaborate courtesy, the Englishman is inviting the enemy to fire first. "After you, Alphonse!" he seems to say.

Not to be outdone, the Frenchman is returning the invitation: "No; after you, sir, if you please!"

The painting long has been considered a scathing satire of the classic concept of war as a manly game played by rule and restraint. And there is reason for believing this is just what the artist intended. Certainly the satire is in keeping with the spirit of his age —the spirit of iconoclasm that produced and prototyped Giulio Douhet's theory of total war. Moreover, the legend that prompted the artist's work gained popular currency about the same time Karl von Clausewitz penned his fateful dictum that any attempt to limit the application of force in war is an "absurdity."

Today, however, a thoughtful viewer of the painting may ask himself which is the absurdity: the formality at Fontenoy or the wantonness at Coventry? Pork Chop Hill or Nagasaki? Korea or an undiscriminating nuclear holocaust?

To other military viewers with a more pragmatic turn of mind, the painting may suggest an ironic analogy to our current policy of inviting the enemy to strike the first nuclear blow. After you, Ivan!

Apropos to our current military situation though both views may be, the painting suggests another line of thought that can be pursued with more immediate profit by modern-day students of war. It begins with the possibility that the legend and painting are but a dream-like disguise for what flashed forth at Fontenoy.

Recent findings by social scientists lend plausibility to this hypothesis. Just as dreams disguise thoughts and emotions too stark for the conscious mind to bear, so do myths, legends and works of art encode moments of truth in the course of human existence.

Literal interpretation of history

No less authority than William L. Langer directed his presidential address toward this thesis when he spoke before the American Historical Association two years ago. He warned his colleagues against purely literal interpretations of historical data and suggested that psychoanalytic techniques may even be necessary in some cases to separate fact from fable.

Granted that the truth of all historical events—even the most commonplace—is subject to successive layers of imaginative camouflage, it is reasonable to suspect that only a big flame could raise as much smoke on the horizon of history as did the Battle of Fontenoy. Hailed as an epic feat of arms and scorned as a tragicomedy of errors, it has been the subject of almost as much debate as Waterloo or Gettysburg. Long after its weapons and tactics were deemed archaic, Fontenoy was refought in the world's military academies and

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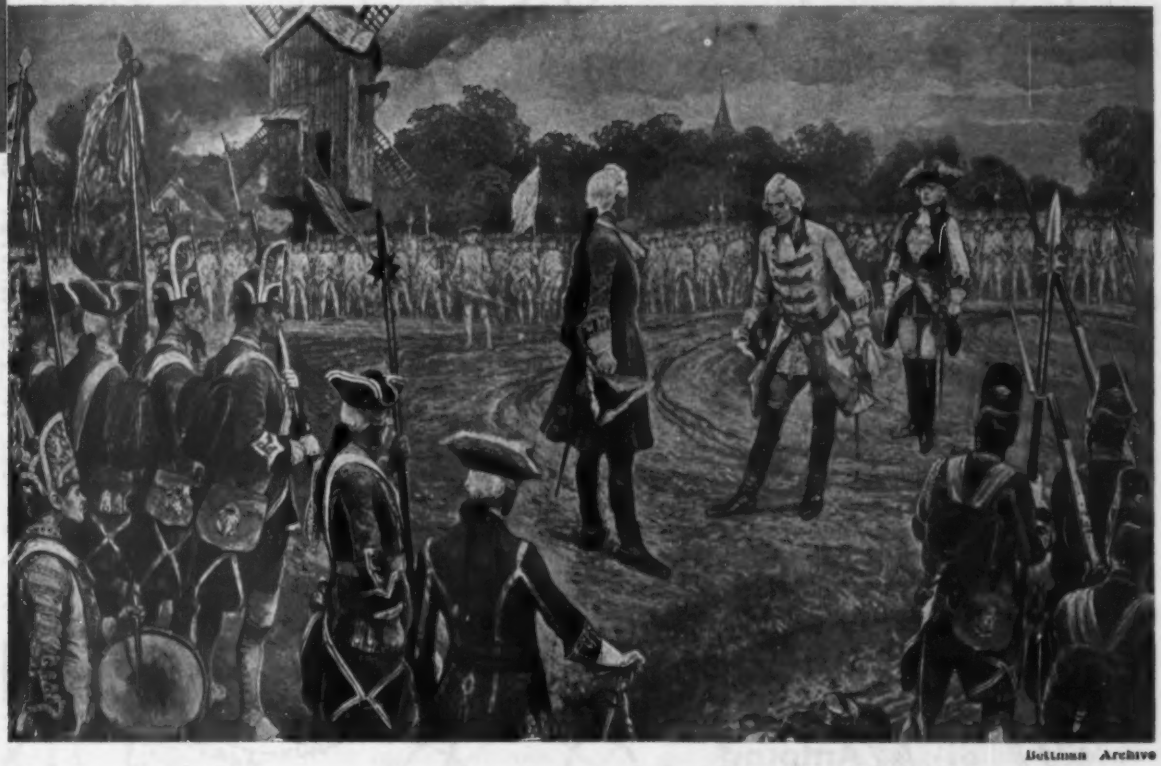
Master Sergeant Forrest K. Kleinman, a frequent contributor, is on duty in the Information Office of U. S. Continental Army Command. His latest article was "The Do-ers" (December 1959).

war colleges. Even today it is occasionally cited by lecturers on the philosophy and history of warfare as a classic example.

Yet Fontenoy was not one of the world's decisive battles. It was not even decisive for the Austrian War of Succession during which it occurred. Its political, economic and military consequences were negligible.

Why then has Fontenoy been so magnetic to the military mind? What happened on that May day in Belgium that was so stark, so stirring to the imagination that its real significance has been masked to conscious recognition for nearly two centuries?

When the records of the battle are examined with this question in mind, the answer leaps to the professional eye. It is presented here in context, however, so that its modern implications may be appreciated more fully.



Bettman Archive

The Allied Army of British, Dutch, Hanoverian and Austrian contingents approached the battlefield from the east with the object of relieving the French siege of Tournai—a key fortress four miles northwest of Fontenoy. Combat strength of the Allied force under the Duke of Cumberland totaled about 46,000 men.

The French Army, numbering some 52,000, was the covering force for the siege. It was commanded by Marshal Maurice de Saxe in the name of King Louis XV, who was present in person to support Saxe against the dissident influence of personal enemies.

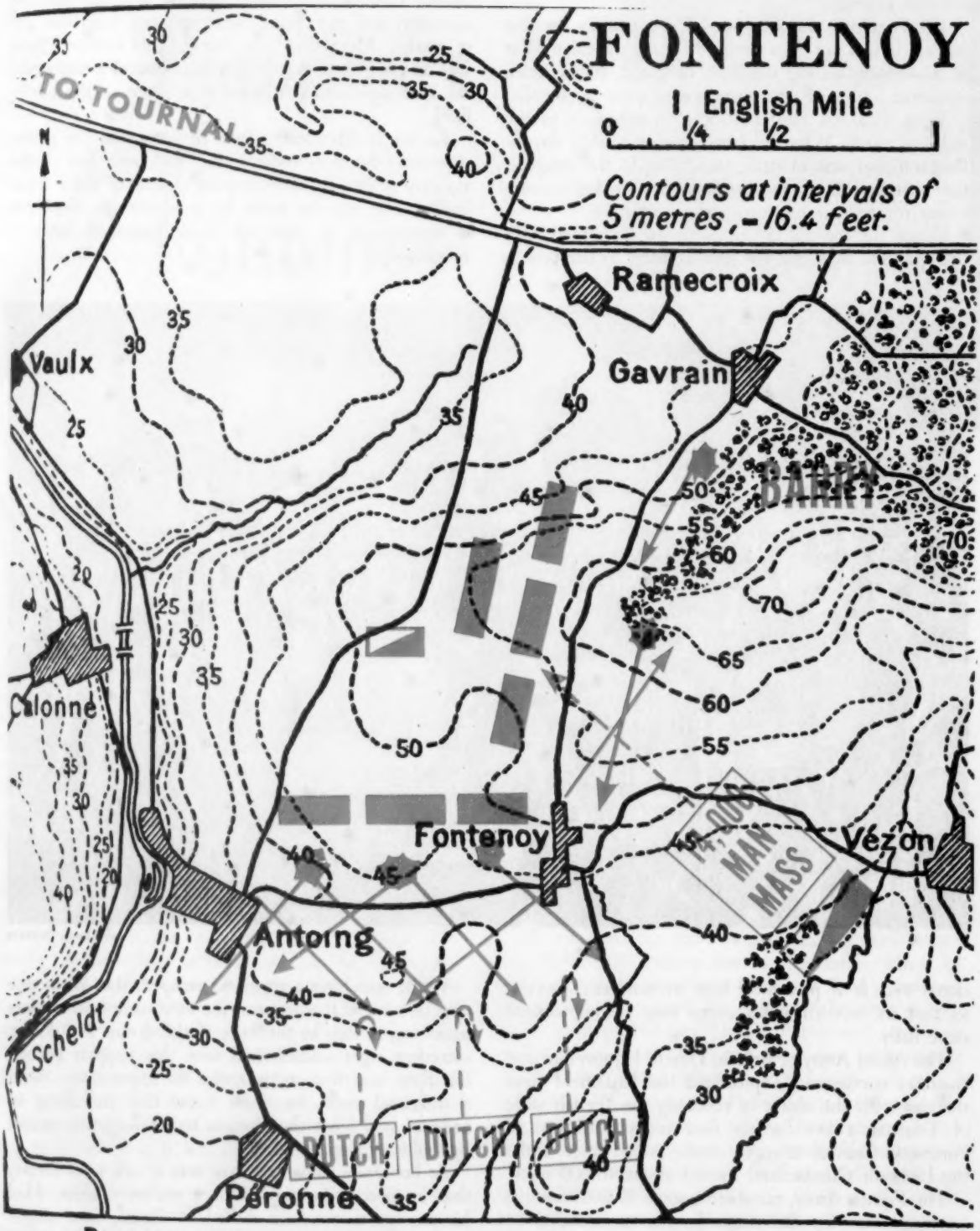
Though 11 May has been called "the one great day" in the life of Louis XV, the presence of Saxe is much more noteworthy. Not only was Saxe a skillful and valiant combat commander, but he had the burning curiosity, and perceptive eye, combined with the gift of genius. More than any man of his century, Saxe was an eyewitness who might be expected to recognize the true significance of what took place on the battlefield.

Earlier in his career, Saxe re-discovered the secret of orderly troop movement that had been lost to the military profession ever since the eclipse of the Roman legion. The way he made his revolutionary discovery is meaningful in view of what happened later at Fontenoy.

While watching a regiment troop to the colors one day, he noticed that some of the men were *instinctively* marching in step to the beat of the drum. No doubt, countless other soldiers had seen this happen before, but Saxe was first to recognize its importance. After a thousand years, he alone knew that marching in cadence was what the Roman writer Vegetius meant by "military step."

At Fontenoy, however, Saxe was so sick with dropsy that he had to be carried in a wicker chariot. Had his perception not been dulled by illness, Saxe might have contributed a much greater innovation to tactical evolution than marching in cadence.

To deny the advancing Allied Army access to the Scheldt River bridges and roadnet leading to Tournai,



PLAN OF THE BATTLE OF FONTENOY, MAY 11TH, 1745

Saxe deployed his army along a chevron-shaped line from Antoing on the right (south) flank, Fontenoy in the center, and the southern edge of the Wood of Barry on the left (north) flank. Both villages were fortified and garrisoned. Three redoubts were constructed between them. A fourth redoubt at the edge of the wood and a fifth toward Gavrain protected the left flank. The cannon of these strongpoints covered the entire front of the position with interlocking fires. Behind them, the French infantry was deployed in successive lines.

Cumberland's plan of attack called for the Dutch contingent to assault the Antoing-Fontenoy sector while the rest of the army attacked the French flank across the open ground between Fontenoy and the Wood of Barry. A cavalry attack around the wood was projected but abandoned on the eve of battle when reconnaissance parties drew fire from the southern edge of the wood. Cumberland then decided to use his cavalry as a screen to cover the Anglo-Hanoverian infantry while it formed up for attack on the plain between Vezon and Fontenoy.

The shibboleth of Mass

The existence of the French redoubt at the corner of the wood was not discovered until deployment was well under way early in the morning of the 11th. Realizing that its flanking fires would endanger his plan of attack, Cumberland directed Brigadier James Ingoldsby to storm the redoubt at once.

The brigade moved off to the right promptly enough but was so irresolutely led that it stalled there for three hours. Meanwhile, the cannon in Fontenoy and in the wood redoubt drove the cavalry screen off the field and battered the upright ranks of the massing Anglo-Hanoverian infantry. Meanwhile, too, the Dutch advance against Antoing-Fontenoy collapsed.

His brigade still motionless on the right, the reluctant Ingoldsby was wounded. His successor, the Hanoverian general Zastrow, gave up the attack and brought the brigade back to the main body.

Infuriated by the incessant cannonade and blunders, Cumberland decided to launch the assault at all costs. In accordance with the professional shibboleth of Mass, the already densely formed troops were closed into a solid oblong 500 yards wide and 600 yards long.

Here, of course, a real military absurdity becomes clearly apparent. But it is not the absurdity of Fontenoy alone! How much more absurd is the obsession with Mass two centuries later, when it sends masses of men into machine-gun fire on the early battlefields of World War I!

As Cumberland moves to the front of the oblong and gives the signal to advance, the dry record comes alive. Instead of the printed page, the mind's eye sees colors flying, bayonets flashing in the sun while the mass moves up the gentle slope in parade order to the rataplan of the drums.

Gaps appear in the front ranks and on the flanks of the mass as French artillery exacts a heavy toll. But the battered mass closes up empty files and continues to advance, followed by a few hand-drawn cannon and the Anglo-Hanoverian cavalry.

Mounting the low crest, rank after rank comes into full enfilade to the flanking artillery fires from Fontenoy and the wood redoubt. At the same time, the French infantry and cavalry lining the reverse slope become visible. The mass halts, hesitates. The moment is pregnant with panic.

Lesson in psychology of leadership

Now occurs the incident fictionalized in legend and painting. But instead of the fabled exchange of invitations to fire, the historical record reveals a practical lesson in the psychology of leadership. As the Garde Français advances to repel the assault, Lieutenant John Hay of the 1st Grenadiers leaps in front of the hesitant Anglo-Hanoverian mass, sweeps off his hat and drinks a toast to the enemy.

Absurd? No more so than the preliminary flourish of the hypnotist's hand, the magician's wand or the man in motion before the ball is snapped in a football play. For movement captures the human mind as well as the eye. From Alexander to Ridgway, battle leaders have often used gestures no less dramatic to catch and focus attention where they willed.

Having caught all eyes, the gallant lieutenant heartens his men with an ironic taunt to the enemy about the French rout at the earlier battle of Dittingen. Then he calls for a cheer and the troops respond. All trace of potential panic is gone.

As if spellbound, the astonished French stand and watch the British muskets come up in response to the order to fire. The volley rings out. Fifty officers and 760 men of the three foremost French regiments fall. The French line is shattered and the remnants flee. Jubilantly the mass moves on.

Now the assault force is well inside the French position and no longer in danger from the artillery fire that enfiladed it earlier. Only the second line of French infantry stands between the Allies and victory.

As the mass advances, firing regular volleys, the French spasmodically counterattack its flanks. The counterattacks are repulsed but they slow the mass and gain precious minutes for the French. Though the real paradox of Fontenoy is yet to come, the crisis of the battle is at hand.

Thinking the oncoming mass irresistible, the French court counsels flight. But the King with the Dauphin by his side stands fast. From some inner well of fortitude, Saxe draws the strength to mount his horse and personally directs cavalry charges against the mass.

His desperate counterstrokes also are repulsed, but the mass loses momentum. Again it comes to an irresolute standstill. And this time the French are in motion while the British-Hanoverians watch spellbound.

At the suggestion of an alert subordinate, Saxe sites artillery pieces to batter the face of the mass—now

reduced by casualties from an oblong to a square. French reinforcements are rushed up from the inactive right wing. The infantry boxes in both flanks of the square. Cavalry forms behind the hub-to-hub artillery, waiting for the guns to do their work.

In just eight minutes the job is done. The square is broken by the point-blank cannonade. But the most significant occurrence at Fontenoy is just beginning.

Unconsciously in the white heat of battle, the British-Hanoverian soldiers execute the proper response to the revolutionary advance in firepower initiated much earlier by the invention of gunpowder. Nearly two centuries before military discovery by rational processes, instinct tells them that the correct answer to massive fires is not *massed* men but *tactical dispersion!*

Breaking off into small tactical teams, the British-Hanoverian force is no longer a focal target for the French artillery. Acting without orders, they withdraw. But this is not a rout. On the contrary. They take a heavy toll from the charging French. (Though the French won the battle, they lost about the same number of men as the allies: 7,200 to 7,500.) Beating off all attempts to close with them by concerted volleys of fire, they succeed in regaining their original position near Vezon.

Principle of Mass might have been stillborn

So ends the battle, but not its implications. Had the British-Hanoverian assault force attacked with the same formation in which they withdrew, how different the history of the world might have been! Had Saxe reflected upon the success of the unconscious actions by the British-Hanoverian soldiers that day as perceptively as when he rediscovered the secret of orderly troop movement, rigid adherence to the principle of Mass as an end in itself might have ended in the eighteenth century instead of the twentieth.

But no one—including historians to the present date—recognized the true significance of what the British-Hanoverian soldiers demonstrated in that moment of extreme stress at Fontenoy. So army after army, generation after generation, continued to mass men on the battlefield and march them upright into the mouths of cannon, the muzzles of repeating rifles and finally the deadly scissors of machine-gun fire. Not until the carnage of 1914-15 would military "science" begin to appreciate that the evolution of unit and individual tactics had been vastly outdistanced by the revolution in firepower. Only then did military planners begin to close the gap—caused by mental rigidity yet bridged by instinct on 11 May 1745!

In view of the explosive progress in tactical firepower since World War II, the ironic paradox of Fontenoy raises analogous possibilities. Since analogy is fallible as well as stimulating, however, questions rather than propositions follow:

Is it possible that our tactical formations and concepts for deployment are as retarded in relation to the lethality of modern firepower as were the tactics of 1745 and 1914 to the cannon and machine gun? Despite budgetary limitations on procuring modern tools for vertical and cross-country mobility, we have taken a bold step forward with the Pentomic division. But have we come far enough in streamlining our tactical organization and decreasing human density on the battlefield—even with the tools at hand? Using man's oldest form of mobility, Julius Caesar's X Legion marched 42 miles and fought a battle in a single day!

Many of today's tactical theorists foresee mobile battle teams as small as a hundred men deployed at much greater intervals than now contemplated for companies, yet performing the same functions of creating targets, controlling ground, and destroying the enemy. This possibility is foreseen in a distant time-frame. But should its realization be as distant as it now appears?

Another analogous question is raised by the obsession with Mass that for so long blinded soldiers to the lessons of actual experience. The question is: Are we similarly preoccupied today with firepower as an end in itself?

Exploitation of mobility is the key

A sampling of current military thought scarcely negates the question: Firepower will destroy enemy masses lured into killing zones! Firepower will deny high ground to the enemy! Firepower will dominate the increased gaps between units! Firepower will accomplish the purpose of maneuver!

Yet actual experience in Korea, Israel, Indochina and Algeria shows drastic limitations on the capability—even the usability—of superior firepower against a determined and tactically adaptive enemy. Consider, for example, the French Army's debacle at Dien Bien Phu!

It was by exploiting superior *mobility*—not firepower alone—that General MacArthur destroyed the bulk of the North Korean Army in the autumn of 1950. As the late General Hoyt Vandenberg said of Korean operations while he was Air Force Chief of Staff, even a massive aerial interdiction program cannot produce decisive results unless it is coupled with ground maneuver.

Granted that we must continue to improve the range and controllable lethality of our weapons in order to promote a favorable kill ratio, the question remains: Are we moving fast enough in the concurrent development of tactical mobility? Or are we relying more and more upon firepower alone to solve our *tactical* as well as our strategic problems of national security?

Thoughtful reflection on the ironic paradox of Fontenoy can provoke many other questions with modern implications. But only one conclusion is appropriate here: Increased dispersion is a passive accommodation to increased firepower; increased mobility is an active accommodation. Both are necessary if tactics are to keep pace with the times. For it is just as true today as it was from Fontenoy to Flanders Field that there is no password to victory!

Stars on the Lapels

You don't have to be smart to be a staff officer but it sure helps

Colonel HARRY D. EASTON, JR.

WE'VE all chuckled at the cartoon of the tramp who asks, "If you're so damned smart, why ain't *you* rich?" With the expectation of readers saying, "If you're so damned smart, why ain't you a general?" I offer some reflections on general staff work. They are based on liberal experience, ranging from mistakes (always mine), perennial anonymity (someone else signed), to personal satisfaction as ample (and usually the only) reward for acceptance of recommendations and writings by quite a few military leaders of varying prominence.

A very sage lieutenant general, wise to the ways of all the services, once advised: "If you have a problem in a line where you lack experience, it would be a pretty good idea to consult someone who *has* had experience. You don't necessarily have to follow his views, but you might pick up some pointers. You also might avoid some of his mistakes." In the light of the general's advice, I offer my experience. In some 18 years of service I have worn General Staff stars for an aggregate of eight—longer than I have worn any of my combat-arms insignia—in peace and in war, at division through to The Pentagon.

The basic personal and professional attributes sought in a general staff officer are simply those desirable in any officer, only more so. Theoretically, he is hand-picked and is considered highly qualified.

Not all staff officers have been to Leavenworth—less than fifty per cent of the general staff in one army headquarters is a sample. Often, officers serve on the general staffs of divisions, corps, and armies even prior to attending the advanced courses at their branch schools. What I have to say won't help what we call "junior Gs" become fully qualified general staff officers. Their indoctrination and on-the-job training are the responsibility of the experienced heads for whom they work.

Know your opposite numbers

Unless you find the practice is discouraged, it seems highly desirable for a staff officer to make a very brief, get-acquainted visit with his opposite numbers at each lower headquarters and in the next higher. It is best to do this in company of the officer you are replacing. In theory, an overlap in assignment for breaking in sounds good. In practice, however, the breaking-in

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period may vary from a couple of days to going into a position that has been vacant for months. One can't always count on having the officer he is replacing do the introducing.

Such a visit should be brief, and one such visit shortly after joining should be enough. Therefore, a good rule to observe is to stay away from other headquarters unless you are sent for or unless you have urgent business there. Don't wear out your welcome. If you aren't careful you can become a nuisance to a higher headquarters, and an undesirable interruption and source of harassment to a lower one.

As a general staff officer, chances are your basic branch is one of the combat arms, just as is that of your commander and his chief of staff. As a sample, at one army headquarters more than eighty per cent of the general staff officers are from the combat arms; in the G4 section, where you might expect to find a greater proportion of officers of the technical services, more than fifty per cent are from combat arms.

Now loyalty and enthusiasm for one's branch is commendable, so long as you don't lose your perspective as to its ultimate contribution to winning wars. However, as a general staff officer, you must reorient your thinking not away from but to a higher plane than that of your branch. Your General Staff insignia should serve as a reminder in that direction. Also, a general staff officer must especially remember what the "general" in the title means. An instructor at Leavenworth told my class: "As general staff officers, you will be wearing those stars on your lapels, not on your shoulders. Don't ever forget it!" While it is true that a general staff officer commands only a desk, often he can influence the decisions of the commander on whose staff he serves.

No stupid questions; only stupid answers

Command carries with it responsibilities to, as well as authority over, the commanded. Thus, the general staff officer shares his commanding general's responsibilities. It is in the very nature of things that perplexing questions which cannot be resolved at lower headquarters seep upward to the general staff for interpretation, clarification, opinion, or decision. In such instances, the staff officer who best serves the perplexed, best serves his CG. To him, the solution may be immediately obvious. Possibly the inquirer misread or failed to check the proper reference; maybe he or *his* commander had been authorized to decide in such cases but did not know this. Here the general staff officer who in his infinite wisdom regards the question as stupid and belittles the inquirer does everyone, including himself, a disservice.

There are *no* stupid questions, only stupid *answers*. This thought isn't original with me, but it's one worth remembering, particularly by any general staff officer who inevitably will be asked for assistance or guidance. If you know the answer, give it freely, clearly, and patiently. If you don't know, it's your job to get the answer by whatever means are necessary from within your section, your headquarters, or the next higher headquarters. Never ramble, bull, cover up, or give personal opinion you can't substantiate. This is particularly true if the problem is out of your province. In such a case you escort, not refer, the inquirer to a knowledgeable person who can help him.

FM 101-5, like the Scriptures, has been amended and revised throughout the years, but it is still the staff officer's basic guide. As even the most gifted clergyman frequently must refer to his Testament, so the general staff officer often must consult his.

Every general staff officer must have a clear knowledge of spheres of interest and responsibility of each of the staff's sections. He gains this from initial familiarity with and frequent reviews of FM 101-5, supplemented by experience and any local ground rules.

Hurdling an impasse

We hear of chiefs of staff who never settle a difference of opinion among section chiefs unless and until the disputants have met and attempted to reach an agreement. This has been decried in certain circles as operating by agreement.

Now the manual very clearly delineates the fields of the various sections, certainly of the general staff. Of course, some overlapping and duplication of interest is inevitable, but basically (to use an extreme example) unless G2 tries to stand down G4 on a G4 matter, there is seldom need for disagreement requiring decision by the chief of staff or commanding general. A section chief, to reconcile divergent views, must rely quite heavily on the intimate knowledge, research, and judgment of his Indians. If he can't he should trade them in for more savvy braves. Very possibly, he will indorse their views by signing much of their work without question and most of it with little inquiry. Being a busy man, he can't meet with other staff chiefs (also busy men) on every matter that arises.

Thus, an impasse may be reached from time to time when the Indians, despite personal discussions, can't reconcile their own disagreements, and each is tacitly supported by his own chief. When that happens, it seems quite proper for the chiefs, whose relative maturity, perspective and experience enable them to view matters more objectively, to talk things over and attempt to reach a solution that is mutually satisfactory. If they can't, each is morally obligated to have the courage of his convictions, present them to the chief of staff or commanding general for decision, then cheerfully abide by it.

I'll show you what I mean. The staff of a large headquarters was planning the conduct of an invasion by an amphibious and airborne assault force of approximately four divisions. G1 wanted more *replacements* during the early lift, G3 more *units*. The disagreement could not be resolved at working level or by personal (and quite heated) discussions between G1 and G3. Each offered his opinions to the chief of staff and the

commander. The commander announced his decision. Each G was satisfied, if not too happy, and then proceeded to other business. The invasion succeeded.

What section gets the job?

At a major headquarters, most staff work is generated by something in writing from a higher or lower headquarters. Now the people who route such correspondence to the staff agencies are quite good, be they officer, noncommissioned officer (specialist), or civilian. Being human, they are fallible. Borderline cases might be referred to the wrong section, but usually the paper gets to the section having primary, though not necessarily exclusive, interest. If there are enough, information copies usually go to the really interested agencies. Even if they don't, the action officer must insure that the work is properly coordinated throughout with other appropriate staff sections. I emphasize "appropriate,"

because concurrence from staff agencies having no special interest is no more valuable than the testimony of a procession of witnesses who did not see a crime committed.

Sometimes the greater interest in and familiarity with implications of a problem by a section other than that to which the action was initially assigned suggests that, as a matter of primary interest, study of the action be transferred from the assigned section to another. Procedures are normally set up for this sort of thing, though it shouldn't be undertaken lightly by a junior G because the project may have implications not known to him. As a guide, it seems that if another section, or one of its divisions, *wants* to take over a project, it should be permitted to do so, for no other reason than that it is particularly interested. And if the section assigned the work feels it should more properly be taken over by another, that too is good. Anyone not particularly wanting to face up to a problem for any reason probably wouldn't do as good a job as a more willing worker. In either event, this is the sort of thing which certainly requires coordination to arrive at a solution. The task must never be transferred without prior consultation and approval of the section chief.

Relations with special staff

All staff officers at a headquarters, regardless of their insignia, are on the same team, supporting the same commander. Unfortunately, a general staff officer isn't issued any extra brains with his General Staff stars, so there is no point in his adopting an air of superiority.

The relationship between the general staff and the special staff can range from virtual command of elements of the special staff by those of the general staff (for example, of technical services sections by G4). This is done through varying, often undefined, degrees of "coordination and supervision" of the special staff by the general staff, with chiefs of special staff sections having free, direct access to the commander and the chief of staff. FM 101-5, the guide, offers sufficient latitude either way, but it leans, as do some experienced staff officers, toward free access. How can a special staff officer "advise the commander" if he can't get to see him?

Never make the mistake of selling a member of the special staff short. For one thing, most likely he is very expert in his line, whereas the officer wearing the General Staff stars often will find himself knowing "less and less about more and more so that eventually he knows nothing about everything." For another, especially at a large headquarters, though nominally he is, say, an "assistant G2," within the sphere of G2 interest a special staff officer might be extremely specialized in a particular field, yet he lacks enough broad experience to qualify him as a division G2 or his principal assistant.

It is possible that a special staff member with whom a newly detailed GS officer works has himself had very extensive general staff experience. Good examples are an AG with G1 experience, or an engineer with G4 background. I knew a doctor (now a general officer) who, during the early days of World War II, as an exception to policy, was detailed on a general staff. He did such a bang-up job in the G3 training field that those ignorant of his background naturally enough assumed he must have been an honor graduate of a combat-arms school.

Access to the commander

At a large headquarters, the junior G's personal contacts with his commander, the chief of staff, and the secretariat may prove very rare. I think the better the general staff officer gets to know and understand his commanding general and chief of staff, the better he serves them. If only, like a fly on the wall, for a week or so he could listen to them talk over day-to-day problems in their offices! If, as a silent spectator, he could attend at least a few of the periodic staff conferences! That would be a big help, particularly if the commander and the chief of staff are inclined to sound off.

Unfortunately, the junior G often is limited to initial office and social calls or receptions, listening to talk at large gatherings, and otherwise depending on notes or usually garbled second- or third-hand reports of what the CG or CofS said he wants done. If the commanding general and his chief of staff have been around for some time, the junior G can supplement his rather meager knowledge with a review of what proposals have been approved in comparable cases, particularly when preparing something for their signatures. One headquarters maintained for reference a collection of the drafts proposed for signature and of the final products that were signed by the commander. This proved very helpful for avoiding expressions and attitudes not conforming to the commander's personality.

While a staff officer must not be governed entirely by precedent, he shouldn't beat his brain needlessly. Everyone thinks himself an excellent judge of character and an amateur psychologist. Why not seize every opportunity to size up the CG and his CofS in order to serve them better?

Reason logically, consider all factors

If you follow a logical course of reasoning and consider all the factors, you should arrive at a proposal that is valid whether or not the commander accepts it. Here a critical element is recognizing the problem itself. Just what *is* the problem? RTP (Read the Problem), several times. Is it perfectly clear? Is the *statement* of the problem clear and complete? Remember, many of us are not facile writers, and the statement of the problem that seems clear to you may not be what the author *meant*. If the slightest element of ambiguity exists, much time and wheel-spinning can be saved by a little foot coordination. Discuss the matter with the person who posed it, be he your immediate boss, your commander, or an officer in another section or at another headquarters. Don't be afraid to ask questions. If the problem comes to you second-hand (say, orally from the chief of staff through your chief to you), your chief might be the one to make inquiries. Sometimes it will be best before approaching the task to restate the problem so that it becomes clear to you. Then check to see whether as restated it is satisfactory to the person who gave it to you. Again, RTP.

You'll learn that instead of pointing out the policy or regulation which precludes granting a valid request (the person making the request can read too), it is far better for a staff officer to try to figure out a way to grant the request, so long as there is good reason for departing from policy or regulation. I don't mean one should say Yes to everything, but I certainly do mean not habitually saying No to everything out of the ordinary. In other words, help your commander exercise some discretion, or do it in his name if you have the authority.

Bear in mind that a local commander may waive a policy or regulation established within his own bounds of authority or discretion. If it is established by a higher headquarters, the authority must come from there. When he feels a departure is justified, the general staff officer must go to bat for the subordinate commander. Purely administrative Army Regulations and other Department of the Army directives can be waived by or in the name of the Secretary of the Army. However, some ARs are based on laws which allow the Secretary no authority to deviate.

The staff's secretariat

The secretariat of a general staff may not spin, but it does toil. It may not do the original, creative work of a section, but it reviews enough of this work that it can sense whether a completed, written project is good or bad. So be receptive to suggestions by the secretariat, and follow its requests or directives on coordination, rewrites, and the like. For all you know, these may well have been directed by the commanding general or the chief of staff. If you have objections, turn them in to your section chief, not to the secretariat, and general staff life will be much smoother.

Another tip: Whenever you carry a paper directly to the CG or the CofS, or are given one to take back to your office, always touch base, however briefly, with the secretary of the general staff. His heels are close to the fire in such matters, and you can see what a spot he'll be in if the chief of staff yells for a paper the CG gave *you* and that you took out of the command section without the knowledge of the SGS. Put yourself in his place.

Foot coordination

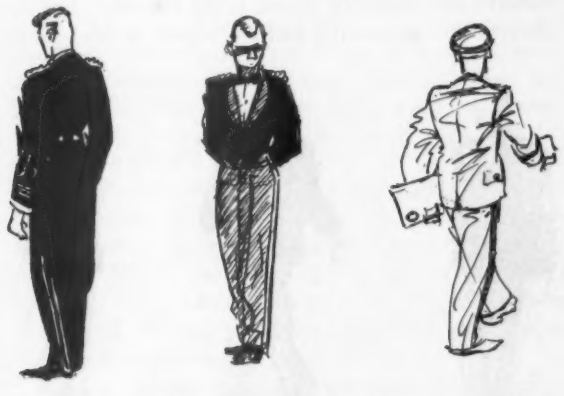
General Pershing is supposed to have said, "They put knobs on doors so you can turn them, walk in, and talk things over with people." An instructional unit at the Armed Forces Staff College calls this "foot coordination." The point is that the staff officer must use his feet as well as his head, and visit and discuss in person problems of mutual interest. That's better than notes going back and forth to members of the same staff. But intra-staff disposition form preparation and memorandum writing can get ridiculous at times. A prime example is a series of DF comments at one headquarters, in the course of a year and a half, accumulating 17 numbered comments by various sections.

During the last couple of wars our troops were kept informed through "Know Your Enemy" and "Know Your Allies" programs. But too often on a very large staff we don't always get to really know our colleagues —those people of other sections who work on matters related to our sphere of interest.

They say you can walk from one point in The Pentagon to any other in five minutes or so, if you use your head. (Of course, if you start in the wrong direction in E-ring you can take an hour getting to the office next to your own.) There is no excuse for not getting to know your opposite numbers. You don't need to get

real buddy-buddy with everyone with whom you do business, but it makes sense for a staff officer working on a project in which another staff officer is concerned, to at least drop by to see what he looks like.

At the other extreme, it is a great mistake to believe that each bit of coordination must be effected only in person or by conference. You've heard that old saw about conferences where minutes are kept and hours are lost. One must be judicious about the practical application of foot coordination. When everything is top priority, all actions become routine. When you carry a paper to discuss with an opposite number, at that moment it is the most important thing in the world to you, or you'd be doing something else. But when you get there, whoever you visit is doing what is to him the the most important thing in the world, or he too would be doing something else. True, he may be flexible enough to shift his mental gears from his problem to yours without reservation. But quite often he won't



be as receptive to or as enthusiastic about your project as you are—at least not right then.

Why not phone the officer ahead of time and ask when you can see him for so long on such-and-such a matter? This assures receptiveness and effectiveness though, of course, during your three minutes you may learn that he opposes your views. But simply barging in on him will lose you time, energy, and cooperativeness.

You soon learn that although several persons in another section nominally are concerned with your project, a particular officer can get you quicker and better answers, ideas and concurrences. If you inquire, members of your section will tell you who this is.

What you write must be understood

Neither General Pershing's philosophy nor the concept of foot coordination dictates personal contact as the only means of solving all problems. The written comment, statement of a problem, request for opinion, and the like, have the advantage of potentially uninterrupted study and consideration at a convenient time. They eliminate *I really said* or *I thought you meant* or *I thought you wanted*. Unlike a conversation, the written project can be considered by a number of others at several places at their convenience.

There is no inflexible rule as to how to go about coordination. Use your head, adapt to conditions, and as you go along draw on your experiences in dealing with the same people. But foot coordination has certain advantages.

For writing that is not on a technical subject, Webster's dictionary lists all the words you'll need. For technical writing there is AR 320-5 (*Dictionary of United States Army Terms*), some of whose definitions differ from civilian usage. There is also AR 320-1 (*Dictionary of United States Military Terms for Joint Usage*). Its definitions have been agreed upon, though that is not generally known, by all three services. The same expression can mean different things to different people. Ask, in turn, an Army officer, a Navy file, and an airman what "operational control" means, and you might get three definitions. (You might get three from three Army officers!) Take the trouble to check.

Procedural rules for guidance, such as those for joint staff writing or the proverbial RTP we've all heard so often, are no good unless diligently applied. RTP is still the best in the book. How long has it been since you went off on a tangent simply because you didn't RTP?

It is not my purpose to attempt a course in expository writing. If bright people like your bosses can't understand what you write, how can you expect duller people to? If your average in getting approval of your work without change is high—say, 95 per cent or better —you're doing fine. When it falls below 80 you're doing fair, but it would be a good idea to take a quick course in good writing or bone a book on the subject.

We've all seen the directive to completed staff work which says in part: study, write, restudy, rewrite. Yet our feelings are hurt when a dashed-off memorandum is not accepted on the first go-around. I have found that from two to four rewrites are normal for the simplest formal written comment (excluding one that gets a "Concur"); more for a one- or two-page letter; up to maybe ten for a staff study or other production with several pages of discussion, or for a multi-page circular or memorandum for general distribution. You may blench at this, just as many staff officers did at a comment on physical fitness in a proposed manual: "Five miles a day is about the right amount of exercise for a staff officer." But in your heart you know the basic principles are sound.

In writing, personal preferences pose a problem. If the person who must approve or sign your product prefers different words and expressions to convey the same thought, all you need do is learn to follow his preferences. A crusty old general, reading the first dry run of a talk prepared for him, may snort, "This is well written, but I just don't talk like that!" Feel your way along. Don't become obnoxious about insisting on your personal preference. Wait until you become boss.

Check your work yourself

A final caution on writing. Most of your work will show up to your chief in the form of something you have written. You, not your clerks, are the one to whom he, and intermediate chiefs, will look for correctness in every particular. Whatever your educational background, you are out of place on a general staff unless you can turn out written expressions of ideas or directives that are grammatically correct and understandable.

The mechanical correctness of your work also is your worry. Sloppy, improperly punctuated work rife with typographical errors inevitably reflects on you. Take a tip from the old story about the father who, after telling his son to jump from a ladder into his arms, let him fall, saying: "Let that be a lesson to you. Never trust anyone, not even your own father."

Even the most competent secretaries are human and can make mistakes. Further, they might not always detect them, even with the aid of a copy-holder. As its author, you are most familiar with your work and its sense, and must proofread each retyping. You may snarl at your clerk for mistakes, but your chief will snarl at you, not your clerk. Trust only yourself to check your work.

Process of reasoning

Many books have been written on the subject of solving life's problems, but for your purposes, FM 101-5 will do. As a logical process of reasoning, the "Commander's Estimate of the Situation" is an excellent guide to solving staff problems. It is accepted by all our services. Considered only a check list, and then only in its application to tactical situations, its value isn't too apparent to run-of-the-mill, peacetime general staff projects. But as a reasoning process, basically it is sound for arriving at a conclusion.

Of more general application is the "Staff Study," also in FM 101-5. It, or some local variation, is in fairly general usage. One may seldom, maybe never, have to prepare a formal written staff study that exactly follows the pattern outlined in FM 101-5. However, if the general staff officer follows the reasoning process—whether briefly and mentally, or in detailed, lengthy writing—along staff study lines, inevitably he will come up with better solutions. If you have had no formal academic training in writing a staff study, a few hours with the manual will be very profitably spent, especially if you can get personal guidance.

Usually the expression "staff study" is misused to mean all sorts of staff writing, from brief recordings of bright ideas and recommendations to documents prepared solely for amplifying and justifying predetermined courses of action. If you are handed the chore of amplifying on a matter, don't feel that you are being asked to come up with an independent solution. Yours is the administrative task of providing someone with a lot of words. Sometimes a better solution may immediately or later seem more attractive to you. If given the opportunity, state your views. However, if it becomes apparent that your chief is inexorably sold on the solution he has directed you to amplify, don't fight the problem. He may have been given no latitude himself, or he may have already considered and rejected your proposal, possibly for reasons unknown to you.

Don't let it get you down if your boss says: "We're going to do thus and so. You write me a staff study justifying it." He really doesn't mean "staff study" in the sense that *you* must work out the problem along staff study lines and must come up with what *you* think is the best course of action. Always remember that he (and most especially your commander, who carries the burden of responsibility) has a different perspective.

Changing the commander's mind

Sometimes you wind up with the decisions of the responsible man being directly opposite your carefully thought out views. In almost every instance (but not always) the commander had the benefit of those views

at the time he, solely responsible for success or failure, made the decision. Whether the recommended course would have been better than the one adopted is immaterial. The commander who invariably follows *every* recommendation of his staff doesn't exercise much personal influence. Conversely, the staff that is so busy bowing and scraping and yes-sirring, that half the time hasn't a clear notion of what the commander wants and why, isn't really serving him. The badly advised commander, or one who doesn't even get the benefit of his staff's thoughts, would be better off with only a clerical force.

You'll find that in advising the commander—or anyone else, for that matter—it isn't politic to tell him immediately after he announces his desires, "That is a bum idea, because. . . ." First, gain a clear understanding of what he wants, then find a later, more propitious opportunity to offer your views—unless of course they are requested at the time.

Inspired commanders, especially in the heat of combat, are apt to make snap decisions in non-tactical affairs. Once during World War II, I heard a commander

say: "I'm getting tired of this looting! Put out the word that the next soldier caught looting is to be shot on the spot!" Now this method may be effective in discouraging looting by civilians, but imagine the furor if the first soldier shot "in the act of looting" turned out to be a devoted chaplain administering the last rites to a dying person!

His idea seemed good to the commander at the moment, because he was devoting his whole attention to winning a war, and he thought his troops should be doing the same. Later, his chief of staff calmed him down, and the order never went out. Had you had the temerity to suggest then that his idea was impractical, your head would have been figuratively lopped off.

Live with your frustrations

Finally, a word about frustrations. On general staff service, frustration seems to stem primarily from being compelled to write upon a subject that goes against one's grain, or seeing his best ideas rejected (original ones particularly, but this may include solutions to problems). This is especially true when your recommendations are summarily rejected by an intransigent intermediary between you and your commander. At the time you think the commander, being a prudent person, would probably adopt your idea and commend you for it if he got to see it.

As a general staff officer, often you may find yourself in the position of implementing—even justifying—matters in which you do not believe. Learn to be philosophical. When your views are requested, give them fully and freely. Unless you learn that they will not be considered once you are given a course of action, offer them at a propitious moment.

Having exhausted these possibilities, either support your chief or ask for a transfer. If later you are asked by an outsider for your opinion, exercise judgment and discretion in deciding to state it. If you feel free to state it, the safest thing to say might be, "Before giving my views, I want it understood that the decision was thus and so, and of course I abide by it." Or you might say, "After having considered my views, my chief decided thus and so, and of course I support that decision." Never reveal your contrary views unless they are solicited.

I know a staff officer who was directed to write two papers with recommendations (to the next higher headquarters) opposing those he advocated. It so happened that shortly thereafter he was reassigned to that superior headquarters and, the ponderosity of higher staff operations being what it is, the first action papers given him were those two. This time, his judgment was supported by his new chief, and the actions originally recommended by him were taken.

A general staff officer who doesn't have—and who can't propose for translation into action—original ideas to improve the operations of the command, isn't much help to his commander. No school can teach initiative, but so many of us have good ideas on all sorts of things and never get around to doing something about them. We may talk about them, but idle conversation accomplishes nothing. The general staff officer should—certainly within his field—ever try to develop ways to do things better, and should encourage others to translate their good thoughts into concrete proposals.

Don't become an idea factory

The good staff officer need not become an idea factory to the extent that he neglects his day-to-day work. If, when you tell your chief about one of your pet schemes, he asks about the job he gave you yesterday and you have to answer, "I've been working on this idea of mine," before long your efficiency reports, instead of reflecting that you are highly ingenious, with lots of initiative and good ideas, will mark you as lacking in follow-through of assigned tasks. It doesn't matter that you think your scheme is more important to the Army's future than the project you are working on for your chief. He doesn't have your enthusiasm for your idea. He is interested only in the project he gave you. For all you know, someone up the line may be nagging him for it, and he will be more than irritated to find you goofing off.

So take first things first. Then submit your brilliant ideas on other matters—unless of course your chief changes the priority of your operations.

An officer who comes up with many good proposals that are adopted may be praised, promoted, and decorated. But the same officer may encounter a situation where those over him simply aren't receptive to new ideas. Some commanders and principal staff officers may carry the stay-out-of-higher-headquarters policy to such steps that they will never countenance forwarding for consideration any unsolicited idea. If ever you find yourself in this position—usually in the lower and not the higher headquarters—don't allow yourself to feel frustrated. Above all, don't stop thinking. Keep calm, adapt yourself to conditions, keep notes of your ideas—and wait. Sooner or later you'll be reassigned, or you will get a new chief. Maybe then you'll have better luck on getting your ideas adopted. Conversely, you may find that the pet scheme which at the time seemed so good and so important, perhaps now isn't so good after all. Or you may find it had already been broached by another discerning officer, sold, and adopted. So while you won't get credit for it, at least you can enjoy vicariously the satisfaction one gets from seeing his judgment vindicated.

When all is said, really the qualities desirable in a general staff officer are the same as those for any officer. If you are inexperienced, you can profit from the experiences of others. As a dedicated officer, do your best and the good things will follow you throughout your career with no necessity for your seeking them. Check your own work, and keep calm. No condition is intolerable so long as life exists. When things are at their worst, the only way they can turn is for the better!

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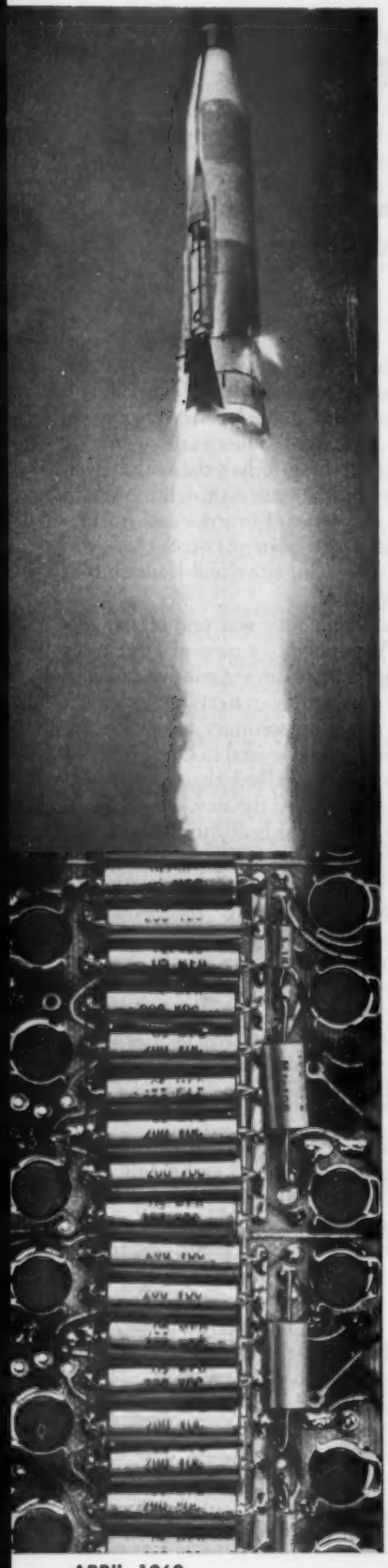

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Empires and nations have passed away because their leaders failed to provide the bold sense of urgency that would have led to victory

Major E. M. GERSHATER

ON 18 July 300 B.C., a huge army of Gauls under Brennus marched on Rome. At the Allia River, about 12 miles north of the city, it met the Roman defenders. The battle ended in complete disaster for the Romans; they were decisively defeated, and their chief city lay at the mercy of the barbarians from the north. No doubt, another day's march would have resulted in the capture of the entire city, but the attraction of looting, wenching, and roisterous celebration must have been irresistible, for the Gauls tarried to savor the fruits of victory. For three days they lingered at the Allia, while Rome made frenzied preparations for defense. When the Gauls entered the city, they found the Capitol building impregnable. The ensuing siege lasted more than six months, but the Capitol held out. At last, discouraged by the long, futile siege (as well as the difficulty of obtaining supplies), and worried by the reported approach of a strong relief force under Marcus Furius Camillus, Brennus decided to let the defenders of the Capitol ransom themselves, and withdrew to the north. Never again would he gain even a foothold in southern Italy, let alone get close to Rome.

The lack of a sense of urgency made the three-day carousal an expensive one.

A BRITISH army under General Sir Henry Clinton was in full retreat across New Jersey. Clinton's objective was to close his army into the area of New York City. General Washington had determined upon an attack in force and had sent forward Major General Charles Lee, with almost half the army, to engage the Redcoats and cut off their escape routes. Lee received these orders on 27 June 1778, but apparently he formed no plan of attack, sent forward no reconnaissance elements, and made no move for more than 24 hours. When at last his army moved, it had to halt at every minor contact with an enemy patrol. While Lee vacillated, the British commanders halted their withdrawal, deployed in battle formation, and prepared to fight. Before they could do any serious fighting, however, an incredible retreat began among the American regiments —Lafayette's, Scott's, Maxwell's, Grayson's, Ogden's, and Jackson's. Lee did nothing to halt the withdrawal; he rode placidly along on the route to Englishtown, in the rear. To his lack of a sense of urgency and his failure to formulate a cohesive plan of attack now was added a complete dearth of initiative and leadership in the face of potential disaster.

It is recorded that Monmouth was one of the few times when George Washington, a man of great piety and restraint, was heard to swear vigorously. Incredulous at the sight of Lee's army retreating without a fight, furious at the wasted opportunity to destroy the British army in the North, the General in Chief relieved Lee on the spot, personally rallied the disorganized regiments, and vigorously pressed the attack on Clinton. The American troops performed brilliantly, despite the 96-degree heat, but by 1800 the issue was undecided.

Washington rested his army that night, determined to renew the attack next morning. But next day there was no enemy to fight. Silently, skillfully, during the night Clinton had slipped away to the east, to Sandy Hook and New York, where his force was out of reach of the Americans. Thus, on the dusty roads of New Jersey, in June 1778, the lack of a sense of urgency lost the opportunity to destroy Clinton's army and to end the war three years sooner.

AS a result of the twin disasters to Southern arms at Gettysburg and at Vicksburg on 3 and 4 July 1863 —black days of the Confederacy—the rest of that bitter, bloody war was destined to be fought on Union terms. In October 1864, while General Grant was attempting to close the vise about Richmond, Sherman had smashed his way past Atlanta and was pulverizing the Southern forces opposing him. Sheridan had occupied and devastated the Shenandoah Valley, the Confederacy's bread basket and historic gateway to invasion of the North. For the Confederates, battered, blockaded, beset on all sides, it was the beginning of the final act. The curtain would fall at Appomattox Court House some seven months later. But there was fight left in the Gray army. Jubal Early, who had on a daring raid three months earlier advanced to within sight of the unfinished Capi-

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tol dome in Washington, suddenly smashed into the Union lines at Cedar Creek, south of Winchester in the Valley. Sheridan had been in Washington for a few days, to confer with Secretary of War Stanton, and on this night had broken his return journey at Winchester. While he slept, during the early hours of 19 October, Early's men surprised and overran the Union forces in the Valley. A major military disaster impended. But Early's men, hungry, cold, but probably exhilarated at their comparatively easy victory, paused to plunder the enemy's camps, to replenish their own seriously diminished supplies, and to rest. Destiny was kind to Sheridan as he awoke. Hearing the sound of guns only 14 miles away, furiously he rode south on magnificent black Rienzi, rallied his retreating, panicked army, and turned disaster into victory. The last major offensive effort that might offer the beleaguered Confederacy hope of postponing its collapse ended in the looted Union camps at Cedar Creek. In this affair we see the lack of a sense of urgency on the part of one commander, and an appreciation on the part of another.

THE Colonel was puzzled. Local counterintelligence had monitored a conversation between someone in the office of a prominent Japanese newspaper and a local dentist. In addition to considerable talk about weather, the number of sailors and marines on weekend liberty at that time, and conditions in general, there were several cryptic references to flowers in bloom, hibiscus and poinsettia. "I think this is one for the Old Man, personally!" A phone call to the General's quarters, a hurried drive, and an earnest discussion of the Colonel's suspicions. In vain. The Old Man threw his arm across the Colonel's shoulders. "You're too intelligence-conscious. Anyway, we can't do anything about it tonight. Come see me in the morning, and we'll talk about it some more."

Early next morning, at the command's northernmost radar station, the two enlisted men watched a very large blip on the screen. At first they thought the set needed adjustment, but quickly decided this was a huge flight of aircraft coming in from almost due north. Breathlessly, they phoned the central information center, spoke to the lieutenant on duty, who reassured them, "Don't worry about it, I'm sure they're ours." The Japanese aircraft on their way to bomb Pearl Harbor were, at this moment on that Sunday morning, less than a hundred miles away. Those of our generation well recall the effects of this lack of a sense of urgency.

ON 10 May 1940, German forces struck west into the Low Countries. As the British and French, from their positions in France, swung north to meet this thrust, the enemy's main attack struck through the heavily wooded Ardennes, which the Allied commanders had considered too difficult for the Germans to attempt. In a brilliant, vigorous, 12-day action, German armor reached the English Channel. It was becoming painfully clear that four Allied armies were almost encircled and in danger of being annihilated. The British Expeditionary Force, its situation desperate, withdrew to the area of Dunkerque.

On the 24th, the German panzer columns were—incredibly—ordered to halt in place, a few miles from the coast at Dunkerque. Manstein, one of Germany's ablest field commanders, tells us that while Hitler's reasons for this personal order are obscure, it was "one of his most decisive mistakes." For 48 hours, Der Führer and his advisers vacillated, argued, pondered, while the German armor remained in place and the British frantically but methodically organized a massive evacuation flotilla. When at last the restraint on the panzers was lifted, and they poured into the Dunkerque area, it was too late. The British had contrived during nine days to transport some 338,000 troops to England in 848 ships. The lack of a sense of urgency made these troops available to fight and defeat the Germans on another day—in Africa, in Italy, in France, in Germany.

AND it came to pass, in the three hundred and seventy-fourth year of the independence of a mighty nation, that the enemy's invasion was halted and his purpose blunted. It was then that the warriors of the mighty nation, powerfully organized and armed, arose in wrath and smote the enemy vigorously, from the hours of early morning unto the hours of late evening, driving him almost to the sandy beaches whence he had debouched the week before. And the enemy was full weary, and thirsting, and panting, and he had great fear, but his great ships approached at forced speed to save him, if they could but do so. And at this time the commander of the forces of the mighty nation said to his staff: "Truly, the enemy is defeated, and our troops are sore tired. Let us rest by the fire this night and finish the task tomorrow."

Nations, empires, and even peoples have vanished from the earth, some even from recorded history. From the long-range standpoint, many disappeared because of their deterioration into complacency in matters of defense and diplomacy. But, in the immediate sense, many passed away solely because of lack of a sense of urgency on the part of their political leaders, their military commanders, their chiefs of the moment. It is trite to quote Poor Richard's "For want of a nail . . . the battle was lost," but history has categorically—and sometimes tragically—established through the centuries that to make rabbit stew you must first snare your rabbit.

A sense of urgency by the commander has helped win many a victory much earlier than had been anticipated. History also tells us that the application of a sense of urgency on the part of subordinates many times contributed to a commander's success.

HOW about you, Captain Staffer, and you, Miss Jones? When you're told the Old Man wants that memo right away, do you turn it out now or put it off until after the coffee break?

No Job for Amateurs

Major JOHN M. COLLINS and Captain ROBERT C. KINGSTON

THE bridge went up with an earsplitting roar in a geyser of shattered timbers and masonry. One vehicle disintegrated in the explosion; another was shattered beyond repair. Clever timing in detonation of the charge stranded disjointed segments of the little airborne reconnaissance platoon on opposite banks of an unfordable torrent. A sudden burst of crackling cross fire converted momentary indecision into near panic, as milling vehicles bunched together seeking security. Enemy hand grenades completed their disorganization. The ambush was a spectacular success.

A grizzled paratrooper major climbed stiffly out of his jeep and surveyed the wreckage strewn on the frozen ground. It wasn't real; only the closing of a two-day field training exercise by 82d Airborne Division reconnaissance platoons. The only casualty was the platoon leader's pride.

"Very unprofessional, soldier," growled the major. "The telltale signs were there for your point to conduct a proper inspection." He clambered down the embankment, thrust his arm elbow-deep in the chilly water, and came up with a pair of wires attached to underwater charges on the pilings; the free ends traced back into the woods a hundred yards or more, where they terminated in a detonator. "Enemy guerrillas won't be so obvious, Lieutenant. You can spot the ties from here, if you look sharp. Another thing: your platoon was bunched like pins in a bowling alley. When the point got hit, succeeding squads came under the same attack. It was impossible to withdraw your advance echelon under covering fires of uncommitted elements. In our business, you're eternally professional or permanently dead!"

This lieutenant was a bright young graduate of the United States Military Academy with a wealth of experience as a rifle platoon leader. His recent assignment to the reconnaissance platoon of an airborne battle group, however, was an entirely new challenge. While solving combat problems in the field, he and his men discovered there is no established Army doctrine for airborne reconnaissance units—no field manual, no Army Training Program, no Army Training Test. They must fend for themselves. Usable fundamentals are buried in widely diverse circulars and pamphlets dealing with intelligence and reconnaissance platoons of the obsolete airborne infantry regiment, tactics and techniques of small armored units, ranger training and survival. All sources must be modified to meet the needs of Pentomic airborne reconnaissance platoons, which are unique in the United States Army.

Reconnaissance platoons organic to the headquarters company of the airborne battle group, and those of the airborne cavalry troop, are remarkably alike (see Figures 1 and 2). Scout squads in the troop are under section control, but they are basically the same as those in the battle group. Most major articles of equipment are identical.

The young officer who commands a recon platoon of an airborne

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ORGANIZATION

Nevertheless, there are a few significant differences. In the airborne battle group's reconnaissance platoon, sergeants are equipped with AN/VRQ-3 and AN/PRC-10 radios; the cavalry troop's platoon sergeants have no radios. Cavalry troop platoons have a quarter-ton trailer; the airborne battle group's platoons do not. The cavalry troop's platoons have antitank defense in the form of one 106mm recoilless rifle mounted on a quarter-ton

truck; the airborne battle group's platoons have none.

MISSIONS

These light, hit-and-run units have missions similar to those of the bygone horse cavalry: screening; flank security; route, zone and area reconnaissance; advance guard; counter-reconnaissance. They are well adapted to unusual missions like terminal guidance or deep penetration parachute patrols which are specialties of the 82d Airborne Division. It's obvious, however, that airborne reconnaissance platoons lack the combat power of their counterparts in the infantry division, which are reinforced by light tanks (Figure 3). The airborne units are tailored to "seek, find and report"; if they are to effectively "delay, deceive and disorganize," they must be reinforced with M56 SPATs or additional recoilless rifles.

In carrying out the directives of

battle group will discover that he must become an old pro fast

division or battle group commanders, airborne reconnaissance platoons frequently fight 25 miles or more beyond the airhead reconnaissance and surveillance line. As often as not, they are out of range of supporting artillery without the benefit of a friendly air screen. Occasionally they are even out of direct radio contact with the next higher headquarters. These conditions demand mentally and physically tough men of the highest caliber. Merrill's Marauders, the long-range penetration group which won undying fame in the jungles of northern Burma, stocked its I&R platoons with battle-hardened veterans. They produced fine results. For its basic material the 82d Airborne Division relies on leather-tough paratroopers. Self-reliant, decisive leadership provides that same indispensable ingredient which, in the final analysis, is what made the Marauders great.

PREPARATION FOR ACTION

Meticulous attention to detail characterizes preparation for combat by all American reconnaissance units. Full realization that once they cross the IP they are on their own provides all the incentive necessary.

Vehicle tops are removed to insure optimum all-round observation. Rear seats are discarded to increase usable load space. Windshields are removed, or are folded down and covered, to eliminate reflection and the danger from splintered glass and to improve forward fields of fire; they are used only when wind-chill demands. Vehicle floors are sandbagged for protection against mines. Extra spare tires and POL normally are carried in a quarter-ton trailer, which the battle group's reconnaissance platoons must obtain from headquarters company. Each vehicle carries a tow-rope or chain on the front bumper and frequently a five-gallon water can as well. Headlights, tail lights, and bumper markings are masked unless otherwise directed.

Special attention is paid to weapons. Each of the eight machine guns is pedestal-mounted on a quarter-ton truck. Bipods are attached, but often shoulder stocks are placed in the rear of each vehicle—ready for immediate use—next to ammunition boxes, extra bandoleers, and spare grenades. All machine guns are test-fired prior to departure on a mission, and remain in free traverse throughout most operations.

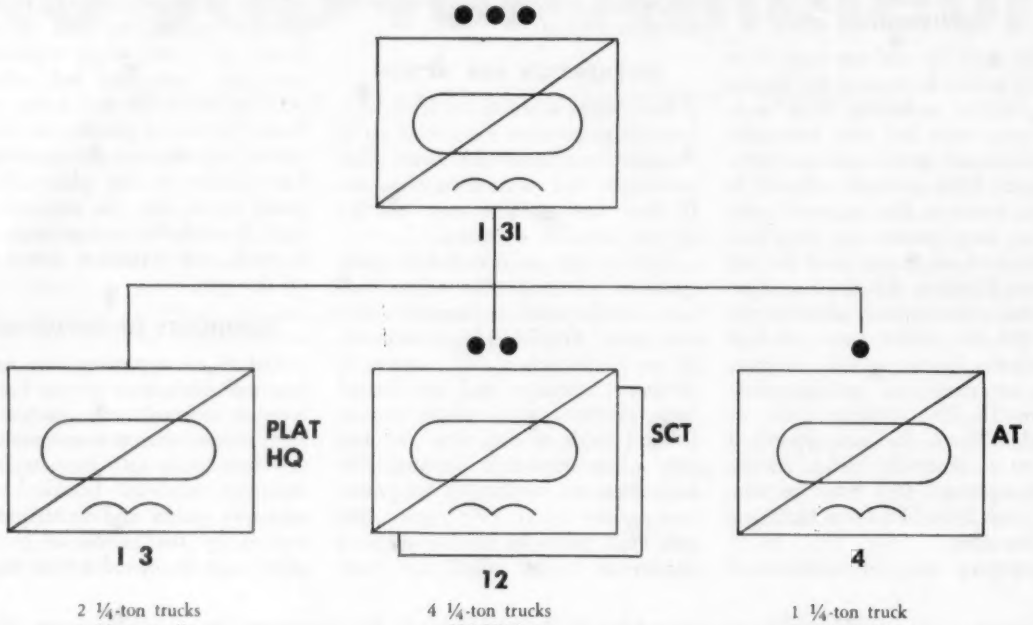
Impedimenta are neatly stowed to avoid loss or breakage. Loose articles such as metascopes, cleaning materials, gasoline nozzles, and cook stoves are stored in a box which replaces the rear seat. Individual bed rolls and personal effects are tied across vehicle hoods. Whenever possible, all vehicles, radios, and weapons are inspected before combat by the platoon's emergency repair crew. In any case, thorough first-echelon maintenance check is made and corrective action taken on the spot.

TECHNIQUES OF EMPLOYMENT

Failure to appreciate the capabilities and limitations of the Pentomic airborne reconnaissance platoons leads some commanders to overcommit these tiny units or to split them up among divergent missions. Standard reconnaissance tactics and techniques prescribed by the combat-arms schools often must be altered before they can be applied to airborne platoons.

Reconnaissance elements riding in light tanks, or in armored personnel carriers, enjoy a certain amount of protection. This is by no means true of airborne reconnaissance troopers, whose field jacket buttons offer scant protection. Platoon leaders and platoon sergeants, armed only with carbines, find it imprudent in the extreme to move alone. In platoons of the cavalry troop they sometimes tend to drift around together, since the sergeant has no radio; in some platoons, unfortunately, he is relegated to the role of resupply specialist. The prospect of policing up this pair, isolated on a lonely ridgeline, fills Aggressor details with glee. Their simultaneous capture shatters platoon control and

FIGURE 1. RECONNAISSANCE PLATOON, CAVALRY TROOP (ABN DIV)



PLAT HQ	SCT	AT
2 ¼-ton trucks	4 ¼-ton trucks	1 ¼-ton truck
1 ¼-ton trailer	2 AN/VRC-10	1 AN/VRC-10
1 AN/VRQ-3	2 AN/PRC-10	1 106mm RR
Platoon leader	4 LMG, cal. .30	Squad leader
Platoon sergeant	2 AR, cal. .30	Gunner
2 Drivers	Section leader	Loader
	Squad leader	Driver
	2 Asst. squad leaders	
	4 Scout-observers	
	4 Drivers	

TOTALS

11 ¼-ton trucks	5 AN/VRC-10	4 AR, cal. .30
1 ¼-ton trailer	4 AN/PRC-10	1 106mm RR
1 AN/VRQ-3	8 LMG, Cal. .30	

results in chaos if Aggressor is bright enough to make use of their signal operation instructions. This could happen in combat. Therefore, platoon leaders and platoon sergeants are advised to separate and travel with different sections or squads for automatic firepower cover. If one becomes a casualty, the other carries on.

Because of their vulnerability, airborne reconnaissance platoons cautiously approach potential danger areas such as bridges, underpasses, and overpasses; fords and ferries; defiles and passes; open fields bordered by woods or other cover; built-up areas; and constricted routes where deep snow, swamps, or other restrictions prohibit cross-country deployment of wheeled vehicles. Teamwork is the key to success. Alert squad leaders know that omission of the fine points can be fatal, and through careful map study they attempt to anticipate problems.

The manner in which recon platoons approach and reconnoiter bridges in enemy territory illustrates precise coordination in ticklish situations. The point vehicle halts in chassis defilade, terrain permitting, with engine running. The vehicle commander vaults out on the double and moves rapidly to a position from which he can survey the surrounding countryside through his binoculars. If he sees nothing suspicious, he calls the second vehicle forward.

Two men advance under cover of the squad's two pedestal-mounted light machine guns, taking full advantage of all available concealment. Dismounting more than one man from a vehicle robs the squad of its automatic firepower in emergency. The guns are placed on ground mounts only if doing so will afford better observation and fields of fire or better security. If they are carried forward, the squad not only is denied vital fire support at a critical moment, but there is the ever-present possibility that the guns cannot be disengaged if the party is hit. An automatic rifle or a carbine serves if automatic fire is needed.

One trooper keeps a sharp lookout while his partner makes a rapid but thorough inspection of the bridge and its approaches, searching particularly for mines, demolitions, booby traps, and associated wiring. If the bridge is rigged, the platoon immediately searches for enemy covering fires. After completing the reconnaissance the dismounted element calls the platoon forward by AN/PRC-10 radio or visual signal, and all vehicles move smart-

ly past the danger point alert for the surprise attack. A report is rendered to the next higher unit.

Airborne reconnaissance platoons are misused probably more at night than at any other time. Once the sun sets, their inherent vulnerabilities increase a hundredfold. Roadbound motorized patrols are easy prey; vehicles crashing through the brush at night announce their own presence, and their progress is slower than that of infantry patrols.

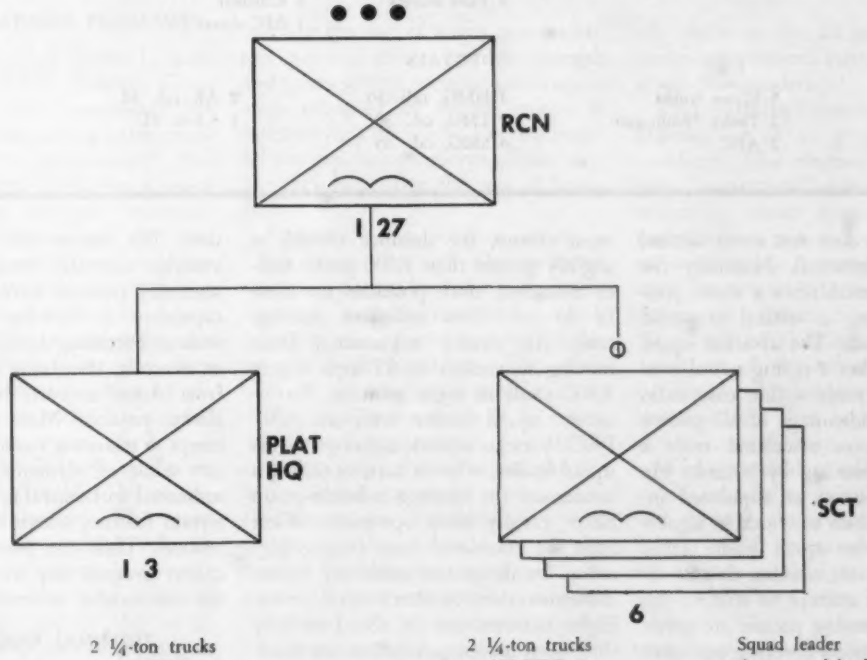
Suitable night missions include dismounted patrolling, local CP security, manning of observation or listening posts, and CBR monitoring and survey. Normally, mounted movement forward of the airhead reconnaissance and surveillance line terminates prior to end of evening, nautical time (EENT), except during periods of unusually good visibility afforded by a full moon or moonlight on snow, when enemy resistance is known to be very light. If vehicles must be used at night under less favorable conditions, motorized elements are preceded by dismounted security. To do otherwise invites disaster.

Planning and executing flank security for a moving column is the most complex mission routinely assigned to airborne reconnaissance platoons. The platoon leader must make a shrewd terrain analysis from the best available maps to select the minimum number of positions which will cover all high-speed avenues of approach leading into the unit screened. He must thoroughly understand time-and-space factors if he is to determine the latest possible time his screen can be installed, how long the individual positions must remain if they are to adequately protect the moving column, and the earliest possible time he can displace his squads to succeeding positions. His squad leaders must walk the ground within each position to determine the optimum disposition of forces under their control.

Economy of force necessarily is a guiding principle, since four little squads hardly represent unlimited resources. In the 82d Airborne Division, reconnaissance platoon leaders generally ignore heavily wooded draws or other infantry approaches on the premise that a significant enemy force is unlikely to penetrate the screen in time to threaten a moving column. Besides, the column is hardly on its way to a picnic; its own local outguards are responsible for providing close-in protection.

If the task obviously is beyond the platoon's capability owing to peculiarities of the terrain, the roadnet, or other difficulties, motorized attachments are in order. Occasionally, screening positions necessitate splitting

FIGURE 2. RECONNAISSANCE PLATOON, AIRBORNE BATTLE GROUP



2 ¼-ton trucks
2 AN/VRQ-3
2 AN/PRC-10
Platoon leader
Platoon sergeant
2 Drivers

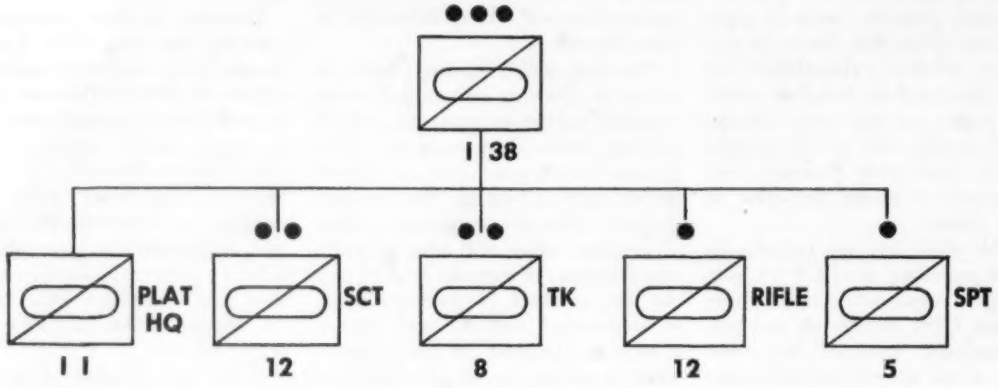
2 ¼-ton trucks
1 AN/VRC-10
2 AN/PRC-10
2 LMG, cal. .30

Squad leader
Asst. squad leader
2 Scout-observers
2 Drivers

TOTALS

10 ¼-ton trucks
2 AN/VRQ-3
4 AN/VRC-10
10 AN/PRC-10
8 LMG, cal. .30

FIGURE 3. RECONNAISSANCE PLATOON, INFANTRY BATTLE GROUP



PLAT HQ	SCT	TK	RIFLE	SPT
1 ¼-ton truck	4 ¼-ton trucks	2 Tanks, 76mm gun	1 APC	1 APC
1 AN/VRQ-3	2 AN/VRC-10	1 AN/GRC-7	1 AN/VRC-10	1 AN/VRC-15
Platoon leader	4 LMG, cal. .30	1 AN/GRC-8	1 AN/PRC-10	1 81mm mortar
Driver	Section leader	2 HMG, cal. .50	1 HMG, cal. .50	1 HMG, cal. .50
	Squad leader	2 LMG, cal. .30	1 LMG, cal. .30	Squad leader
	2 Asst. squad leaders	4 SMG, cal. .45	2 AR, cal. .30	Mortar gunner
	4 Scout-observers	Platoon sergeant	1 3.5-in. RL	Asst. mortar gunner
	4 Drivers	Tank commander	Squad leader	Ammo bearer
		2 Gunners	2 Fire team leaders	APC driver
		2 Loaders	2 AR men	
		2 Tank drivers	6 Riflemen	
			1 APC driver	

TOTALS

5 ¼-ton trucks	4 HMG, cal. .50	2 AR, cal. .30
2 Tanks, 76mm gun	7 LMG, cal. .30	1 3.5-in. RL
2 APC	4 SMG, cal. .45	

a squad. This does not mean tactical integrity is destroyed. Normally the squad leader establishes a static position dominating a critical crossroad or merging roads. The assistant squad leader undertakes a roving patrol over a prearranged route within easy radio range, taking advantage of all passive security measures associated with a point vehicle moving by bounds. He reports his position at stipulated intervals. His failure to check in signals trouble, and the squad leader takes appropriate action, whether that be retirement or an attempt to retrieve the patrol. These roving patrols are given explicit instructions covering emergencies, including visual and sound signals, rally points, alternate routes, and current procedures for re-entry of friendly lines.

As a rule of thumb, flank security positions are established roughly 5,000 yards from the unit to be screened, depending on the terrain and the enemy situation (see map). If platoons must choose, the distance should be slightly greater than 5,000 yards, rather than less, since positions too close in do not allow sufficient reaction time. An enemy mechanized force moving to contact at 15 mph covers 3,500 yards in eight minutes. An assistant squad leader with an AN/PRC-10 radio reports sightings to his squad leader, who in turn notifies his lieutenant; the message to battle group S2 or cavalry troop operations officer must be translated into fragmentary orders by designated authority before dissemination to threatened units. Eight minutes can be sliced awfully thin, even if communications are working perfectly and some intermediate addressees are by-passed.

When an airborne reconnaissance screen makes contact, its actions and orders are simple: it lays down an aggressive base of fire to make the enemy deploy, calls for artillery if the circumstances warrant, and reports details immediately to the next higher unit. The one or two lightly armed vehicles normally found at any one screening position have a very limited capability to develop the situation without becoming decisively committed or overrun; they may seek assistance from Army aircraft, but this is not always possible. More often, they attempt to maintain visual or sound contact while all elements conduct a coordinated withdrawal to the next major terrain feature, where they repeat the process. Thus the platoon can trace enemy progress step by step and keep the commander informed.

TERMINAL GUIDANCE

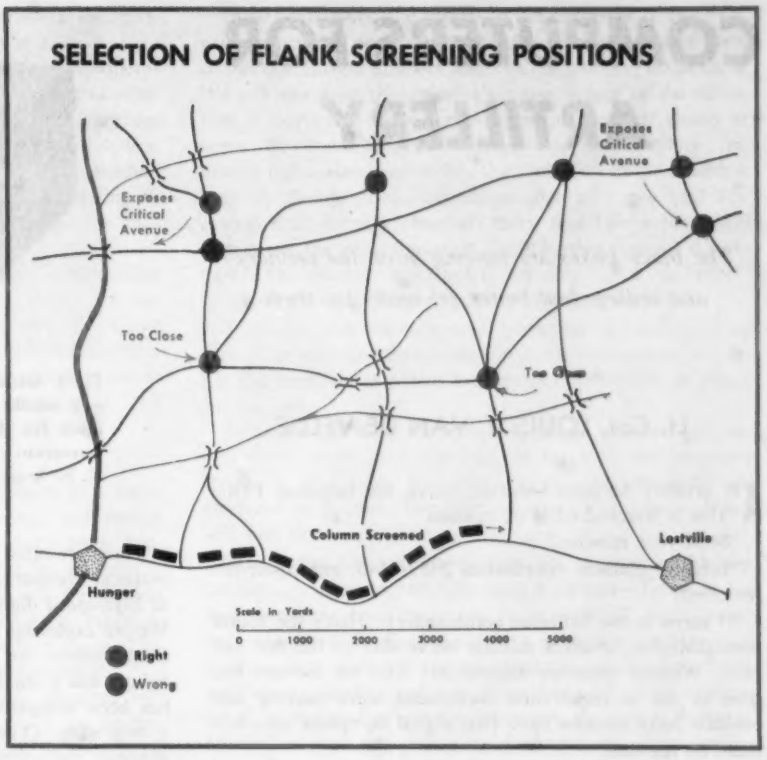
The very nature of airborne reconnaissance operations creates a pressing need for built-in terminal guidance, since the platoons often rely heavily on the air for resupply, reinforcement and evacuation. They must be prepared to redeploy by air—lock, stock, and barrel—at a moment's notice.

Terminal guidance specialists in air-

borne reconnaissance platoons deal primarily with Army fixed-wing aircraft and helicopters. While Pathfinder support for USAF aircraft is provided by Air Force combat control teams, airborne troops nevertheless must be prepared to assist if they are required or to assume full responsibility in emergency.

Terminal guidance covers a broad spectrum. At the very least, reconnaissance troopers must be able—day or night—to reconnoiter and clear suitable drop and landing zones and to establish and operate navigational aids, including air-ground communications, homing devices and beacons, and assorted markers. These chores encompass a wide variety of skills, ranging from wind measurement to arm-and-hand signals for directing aircraft to the ground.

Neither the cavalry troop's platoons nor those of the airborne battle group have the specialized paraphernalia required for terminal guidance, but they can get it readily from troop or group headquarters supply. They are trained to extemporize if the need arises.



COMMUNICATIONS PROBLEMS

Lieutenant General Robert F. Sink, commander of XVIII Airborne Corps and STRAC, once humorously observed that "if you ain't got communications, you ain't got nothin'!" This homely philosophy highlights a major difficulty facing airborne reconnaissance platoons: how to get the word back to agencies which need to know.

The great dispersion and fluidity of modern airborne warfare force reconnaissance platoons to undertake missions which often overextend their communications to the point of absurdity. All organic radio sets are frequency modulated types, the best of which are the AN/VRQ-3 of platoon leaders and the AN/VRC-10 of section and squad leaders. The rated range of these sets, which rely on line-of-sight transmission, is roughly 10 miles; broken terrain or electrical disturbances may reduce this range drastically. Unhappily, requirements for double this range or greater are fairly common.

Obviously, all sorts of field expedients are mandatory. Sometimes, curses and kicks aimed at equipment are effective, though ill-advised. Aerial radio relays are not generally available. Ground relay stations manned by platoon members can do the job, but like the use of motor messengers, this practice dilutes combat strength and poses serious security problems in areas occupied by enemy troops or infested with guerrillas. Pigeons might fill the gap, being airborne all the way, but they have gone the way of horseflesh.

Apparently the solution awaits a TOE change that will allot to reconnaissance platoon leaders a light, voice-operated, medium-range radio which combines ease of operation and maintenance with durability. The AN/GRC-65, an amplitude modulated set with a rated voice range of 50 miles, meets these requirements better than any radio currently authorized the airborne division; it might prove a suitable interim set, even though it weighs 220 pounds, but it would not cut the mustard for deep penetration parachute patrols if direct communications with the staging area were essential. In the long run, there is a pressing need for a new radio designed precisely to fulfill reconnaissance demands.

THE 22 lieutenants and 634 enlisted men privileged to serve in airborne reconnaissance platoons occupy an enviable position. Those assigned to the two cavalry troops are directly controlled by the division commander himself; those in the 12 airborne battle groups are personal instruments of the group commanders.

This exclusive fraternity has responsibilities out of all proportion to its numbers. The absence of accumulated combat intelligence, available to straight-leg forces through prolonged ground action, puts airborne commanders in a crack. Aggressive reconnaissance can mean the difference between success and failure from the instant the assault echelon hits the silk—and the brunt of the effort falls on the airborne reconnaissance platoons. Performance less than superior is completely unsatisfactory.

Wise commanders acknowledge this simple truth by coupling responsibility with prestige, thus ensuring that their hell-for-leather reconnaissance troopers are the best of the best. Colonel Dorsey E. McCrory, now G2 of XVIII Airborne Corps and recently commander of the 2d Airborne Battle Group, 187th Infantry, summed up the typical attitude: "I kept my reconnaissance platoon filled with high-quality personnel, using its command positions to reward outstanding officers and noncommissioned officers." Like his contemporaries, he realizes that airborne reconnaissance is not for amateurs.

COMPUTERS FOR ARTILLERY

The black boxes are moving in on the artillery and redlegs had better get ready for them

Lt. Col. LOUIS R. VAN DE VELDE

AN artillery forward observer radios his battalion FDC: "This is Ramrod 62. Fire mission."

"Send your mission."

"Infantry platoon, coordinates 2987-6448, immediate fire for effect."

S3 turns to the battalion commander: "That's the fourth immediate-fire-for-effect mission we've shot in the last half hour. Without observer adjustment! And we haven't had time to fire in registration corrections since moving into position forty minutes ago. That digital computer sure lays them on the line!"

Yes, computers are moving into the artillery, and gunners had better be getting ready for them. The artillery is planning to take advantage of the capabilities of the high-speed electronic digital computer—in fire control, in survey, in preparation of the met message which gives the artillery its weather data for fire control. These are obvious applications for digital computers—straight technical, mathematical problems. The questions are posed in numbers and the answers are always stated in numbers-digits.

Field Artillery Data Automatic Computer (FADAC) —a small, rugged solid state digital computer developed for the fire control problem but adaptable to numerous computing tests; will be tested this year by U. S. Army Artillery Board at Fort Sill.

There are other artillery applications: for technical mathematical computing, for data processing (another function of high-speed digital computers), and for areas in between. We are exploring the potential for computers in every unit, from battery to field army. The Artillery and Missile School has a small, commercial model of a computer that has been designed to work up fire plans, but this is just a beginning. Other aspects of data processing are being analyzed and scheduled.

Technical help for forward observers

First, let's see what the artillery requires for technical, mathematical computing. Furnishing that forward observer with a capability for rapid and accurate fire control is an obvious and urgent need, and one that is getting considerable attention.

During 1960 the artillery will receive prototypes of a fire control computer: Field Artillery Data Computer

Computers capable of producing more accurate data faster will be used in Fire Direction Centers (left), and forward observers will use automatic message entry devices (opposite page)

(FADAC). Initial sets will be designed to solve the gunnery problems of cannon and Honest John units.

FADAC can perform thousands of arithmetical operations a second, and can remember the location of a number of targets. The gain in speed will be valuable; but current field artillery graphical methods are rapid and flexible too. The expense of a digital computer could not be justified on the basis of the small gain in time while responding to requests for observed fires. What really justifies the machine is the gain in accuracy.

Current fire-control techniques for cannon and rocket units afford a firing table solution. Firing tables are approximations. They can be nothing else within the space limitations imposed by the user. The computer will develop a pure ballistic solution of the same type as that used in the large machines at ballistics research laboratories. The computer solution must inevitably be more accurate.

Benefits derived from computers

There are a number of significant implications in a more accurate solution to the problem of cannon and rocket fire control. Artillery will be able to fire many more fire-for-effect missions, missions which will require no adjustment by the observer even though no recent registration has been tried. The obvious gain in effect on the target is perhaps matched by the time and ammunition saved. Observers can call many more missions in a given period.

A reduction in the number of registrations required will bring many benefits. Logistically, we will save in the ammunition we must move forward. How many thousands of rounds were expended during World War II and in Korea in repeatedly registering and re-registering batteries? I don't mean to imply that at times registration will be unnecessary; but the need should be materially reduced through a pure ballistic solution in which errors are eliminated or reduced to a degree not now possible.

Fewer registrations will mean more and greater surprise. Units can move into new positions and be ready to render effective support with no telltale pre-firing registration. Tactical mobility will be enhanced. Often during the past, oncoming darkness and other restrictions on registration in a new area influenced the displacement of artillery units. Registrations can be time-consuming. Using current methods, missions sometimes must wait or registrations must be interrupted.

Of course, a machine can give only answers that are as good as the data fed into it. If the target is not correctly located, the observer will have to adjust. There are many areas of the world for which we have excellent maps. We can turn out photos and photomaps rapidly. Often, observers who are working with an FDC equipped with a computer, can pinpoint targets and bring down immediate fire for effect.

A computer that can second guess

We just said that a computer's answer can be no better than the data fed into it, but that is not entirely true. Sometimes the machine can improve on the observer's data. At Fort Sill the Gunnery Department is completing work on a computer system that will simultaneously correct the observer's reported azimuth to the target and his estimate of the distance to the target. Further, it may be possible to identify observers to the machine, and let the machine learn which observers habitually underestimate distances and which overestimate.

In all probability, the arrival of the computer in the FDC will relieve the observer of the few remaining arithmetic chores our current gunnery methods require him to perform. We will still need the observer's measurement of the deviation in burst and his determination of depth of shorts or overs. However, here too, changes are in the offing. Improved techniques, well within the capability of the machine, may so change firing procedures that after the first few rounds fired for any observer, those that follow them will impact on the observer-target line (barring normal dispersion). The observer will have to say only "over" or "short" and let the machine bring the fire down on the target.

Naturally, the machine will remember the locations of several targets and the correction factors necessary to permit the battalion to repeat fire, on call, as rapidly as pieces can be laid.

In preparing data for relatively large numbers of targets to be fired on a schedule, or on call, the computer will save vital time, and guard against human error engendered by fatigue. The machine may break down, but it will not tire.

Missile fire control also entails an obvious application for high-speed computers. One such computer—Jukebox, for Redstone—has been delivered to operational units. Jukebox computes, in five minutes, a complex mathematical problem that takes two trained operators, working manually with electric desk calculators, from two and a half to three hours. In the case of missile computers, the gain is in speed. Manual solution is accurate for Redstone, but is intolerably slow. Every missile type will have its appropriate fire-control computer. Because all digital computers perform the same basic arithmetical functions, all are in the broad sense potentially general-purpose machines. One machine that computes the fire control problem for a certain missile can be adjusted to do the same job for another missile. Of course, there are technical limitations in some cases, but inevitably the trend will be toward standardization and limitation of types of digital computers for artillery.

Mock-up of computer developed for artillery

Fire control, survey and met message

Artillery survey poses a problem in straight mathematical computing and in data processing. The end product of artillery survey is the precise location, in three dimensions, of points in the areas of the artillery battalions, plus the establishment of a reference direction. To reach this end the survey system must build a network of computations and a set of centers for exchanging data. For this task a computer-supported system is currently being developed. Regardless of whether in the near future the completely integrated task can be performed automatically, individual computers in various units, supported by conventional communications, will speed the survey process and enhance the reliability of results.

The preparation of artillery meteorological message data has been developed and refined through the years. Yet the manual preparation of timely data necessitates the use of graphic methods and approximations that cannot possibly match the precise results from a high-speed machine. The application of computers to the production of artillery met messages is an immediate prospect.

Fire control, survey, and met message formulation are the three primary applications in the field of technical, mathematical computing. Many of the applications in the data-processing field are straight business-accounting type problems. They are challenging because of their magnitude and because of the requirement to bring together the input from many sources. Others are less static—or at least less obvious in their outline—and are more challenging to the gunner who is concerned with formulation and analysis of problems. I am thinking particularly of fire planning.

Lieutenant Colonel Louis R. van de Velde, Artillery, is Chief of the Research and Review Division, Department of Gunnery, U. S. Army Artillery and Missile School. He was commissioned in the Field Artillery Reserve after graduating from Princeton University in 1937. He served in ETO during World War II and in Korea, and was integrated into the Regular Army in 1946.

The implications are enormous

The Artillery and Missile School has a system which can be placed on the small commercial model computer (a Bendix G-15D) to work out a schedule of nuclear-free fires for division artillery. This is a first bite into a large problem. Fire planning includes much more than working out a fixed schedule of fires. However, the School's system works; it demonstrates that fire planning can be worked out in a few minutes on a small, tactical type computer. The implications are enormous. If we can reduce the laborious process of fire planning to an operation requiring less than 15 minutes, we can cut the reaction time of large units drastically. This may materially affect the tactics of divisions and larger units.

Frequently, visitors to Fort Sill are incredulous when they first see the fire planning system. Usually they intimate that there is some hocus-pocus about the operation, or that the results are poor indeed. Surely no machine can acquire the battle experience (and the judgment derived from it) that we expect in commanders and staff officers!

The objection is valid—to a point. However, it breaks down for two reasons. First, many actions that we view as the exercise of judgment involve not judgment, but a routine response to a routine situation. Second, the machine can be made to accept human judgment in a number of ways: in establishing initial criteria; in modifying criteria in response to human direction when intermediate answers are presented to the operator for inspection; or through processes that can be fairly termed self-education of the computer.

Consider the first point: that often what we term the exercise of judgment is in fact merely calling forth a typical response to a standardized situation. For example, we are preparing a fire plan to support a division artillery's schedule of nuclear-free fires. The staff officer who is scheduling the fires of the available battalions, in running down his target list, comes to one labeled "machine gun." Map coordinates are given, recent intelligence indicates the weapon is most probably where shown, the machine gun is on high ground, and in the general line of advance of the attacking force. The staff officer comes up with response *A:* he schedules a certain caliber and volume of fire against the enemy weapon. A moment later he comes to another item on the target list that meets the same general description. Again, response *A*. There may be some difference between the positions of the two enemy weapons, but by the time fire is planned this difference has left the intelligence picture. The difference may have been too subtle to permit reporting in acceptable brief report procedures. It probably follows that from a tactical point of view the difference between the positions of the two weapons was also immaterial. The point is that standard reaction on the part of the fire planner is motivated by a standard piece of intelligence. Much of fire scheduling is along these lines. Most officers drawing up schedules of fire have had only a general view of the terrain.

Now there is quite a difference between a machine gun

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in the line of advance (or with a field of fire covering the line of advance) and another too distant to permit it to fire on the assault element. But this is geometry and can be readily determined by the machine.

How the computer reacts

In attempting to draw the line between the application of judgment and the production of a standard response to a standard situation, it is important to have a general understanding of how the computer attacks the problem. A modern electronic digital computer can do arithmetic, and nothing more. However, the fantastic amounts of modern mathematical problems can be reduced to a series of arithmetical operations. Further, items in any category, and categories of items, can be given numerical values and thereafter treated arithmetically. For example, in our scheduling program, say we give machine guns a target type value of 1 and mortars a target type value of 2. Now we direct the computer to subtract 1 from each target type number; we tell it that whenever the result is zero it should answer with response *A*, the standard reaction to machine guns. This, in essence, is all the machine does. It determines through simple numerical operations what it is dealing with and produces an acceptable reaction and prints out the reaction for the staff officer to see.

To the objection that the computer's reaction is too rigid, that it permits no room for variations in plan, or situation, or the many imponderables of the battlefield, the answer is that more and more refinements can be built into the system if they are thought of in advance. Perhaps more important, the system permits the commander to modify his criteria at any time. Say a certain enemy is particularly sensitive to previously determined standard rates and types of fire. Very well, the commander directs that the standard reaction to a particular type of target be increased, or doubled, or changed to a degree that his battle experience and judgment suggest. The machine works with numerical values and makes its determinations through arithmetical operations. To this extent only is it rigid and inflexible, permitting no subtlety in judgment. Leaving aside for the moment the fact that machines can be directed to learn from their own mistakes (since this requires large systems, run on large machines), we can see that judgment is inserted by the human being by changing the constants as the game progresses and the need arises.

Tactical applications

Now it's time we examined in a little more detail the logic and method of the Fire Plan Formulator (the name given the first draft of the fire scheduling system being experimented with at Fort Sill). An understanding of how arithmetic is applied to quasi "tactical decisions" to produce acceptable answers will afford the reader a basis for judging the feasibility of other proposed tactical applications of computers. I believe the fire planning computer system will prove to many that the implications of computers in the artillery are limited only by the imagination and effort we are willing to devote to analysis and devising—and not by the complexity of the problem.

The fire scheduling problem can be said to comprise two phases. First, the machine must determine which units *can* hit which targets; then it must determine which units *should* hit which targets. The problem is written in analytic geometry and reduced to arithmetic. Determining who *can* hit is straight mathematics. Locations of gun and target are compared, azimuths of fire are considered, and a tabulation of the results is stored in the machine's memory. Considering one target at a time, the machine examines each unit that can hit that target and determines if the desired effect can be achieved by assigning the unit to fire on the target. This is the who-*should*-hit phase. It is clearly the more subtle and interesting.

To begin the entire problem, it is necessary to feed into the computer certain organized inputs. These inputs have been divided into two parts: data with respect to the targets (called the *target word*), and data with respect to the fire units (called the *fire unit word*). The commander's criteria are considered constants in the system. They can be changed, but it is presumed they will not change with each plan.

The target word consists of seven pieces of data: concentration number, coordinates, type, magnitude, priority, phase, repeat.

The *concentration number* is a tag that will identify the target on the final fire plan. The tag also permits deleting the target from the target list at any time prior to computing the fire plan. *Coordinates* are standard universal traverse mercator (UTM) grid coordinates and form the basis for the determination of *can*-hit lists by the computer. The next five items in the target word permit the blend of routine reaction and judgment (or commander's preference) in the machine-developed plan. The five items are all determining factors in the *should*-hit consideration.

Classes of targets

If we want a standardized reaction to targets, we must have standardized targets. The working group at the Artillery and Missile School has developed a standard list (not approved as official) composed of three classes of targets, and within those classes, nine types. We think all targets that can be engaged by a ground force with nuclear-free planned fires can be classed as falling within one of these types:

Class	*Type*
I. Personnel in the open	1. Infantry in the open 2. Assembly areas
II. Personnel under cover	3. Infantry dug in 4. Command posts 5. Infantry weapons
III. Personnel-matériel combinations	6. Mortars 7. Artillery 8. Armor 9. Supply dumps

A magnitude is associated with each type of target. This magnitude goes into the machine as input data and is determined by the operator (or planner), based on standing operating procedures, intelligence, or such other criteria as have been established. Magnitudes range from 1 to 3. Thus, it is possible to describe 27 different targets: 9 types, 3 magnitudes. Plenty of leeway for judgment and preference.

For the machine, priority has been established as 1, 2, or 3. Priority 1 targets are those that must be hit or the fire plan is considered unacceptable. In such a situation the machine halts to await new instructions. Before stopping it attempts to shift the center line on which the battalions and batteries are laid to see if a slight change will increase the unit's capabilities. Priority 3 targets are those that can be most readily discarded. This leaves, by forced definition,

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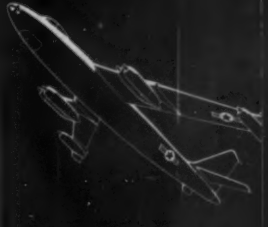

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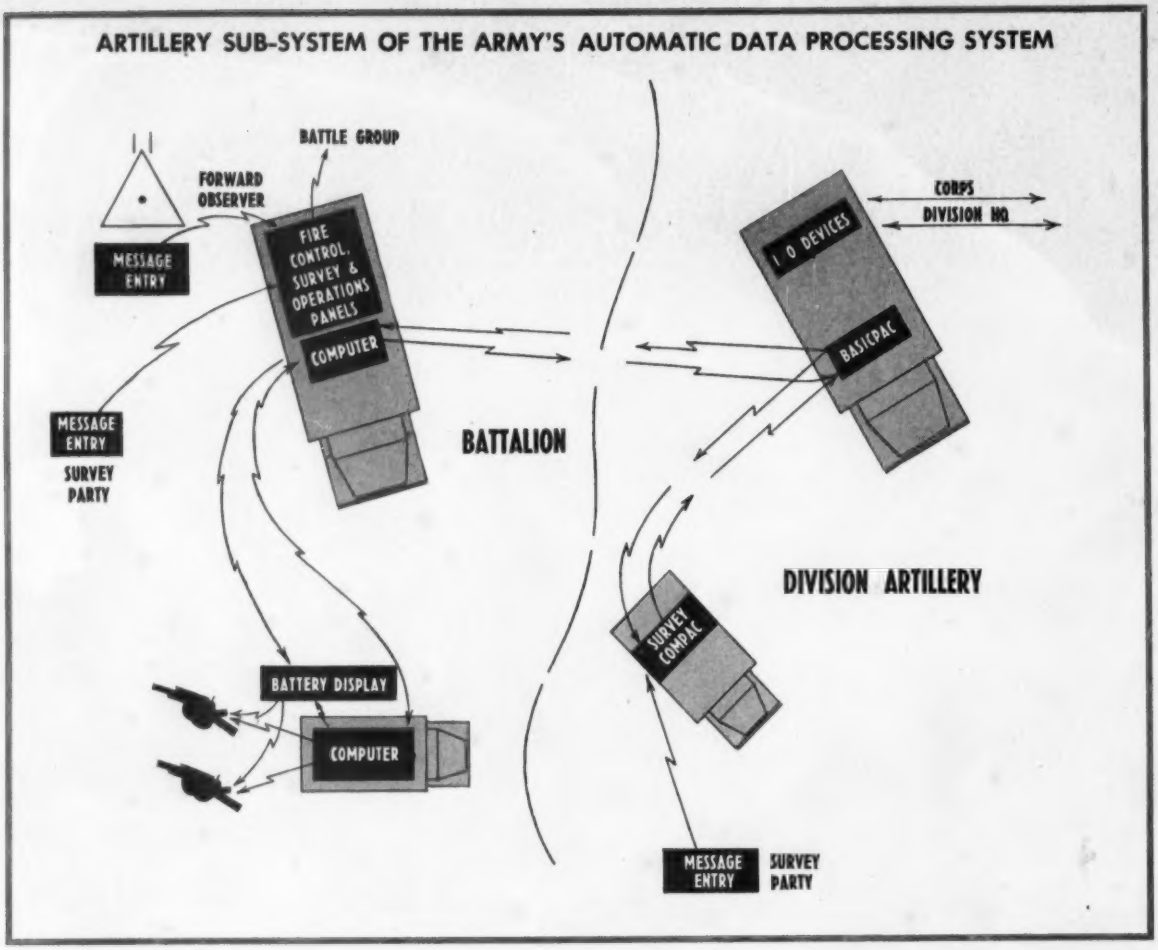

priority 2 as those targets that should be hit if possible, and are not to be discarded until after priority 3 targets are abandoned. A target is assigned priority as it is entered on the list. Clearly, the commander's policy governs.

The remaining two items in the target word determine whether the target is fired on early, late, or in the middle of the schedule of fires; and whether or not fire is repeated on it. Each target is tagged with the desired action as it enters the machine. If the commander wishes to make it SOP that certain types of targets are always fired on during a certain phase of the fire plan, this can be built into the system. The time required to input target data will be reduced accordingly. The same applies to the repeat requirement.

If the machine is to make determinations with respect to the targets, we must furnish it data on the fire units. The fire unit word consists of five parts. We need not discuss them in detail since the purpose of each piece of data is obvious: unit number, caliber and number of batteries, coordinates, azimuth of center line, mission (that is, "direct support").

Artillery sub-system

The Fire Plan Formulator system, modified and refined as it will be at the School, will turn out a fire plan in less than a quarter of an hour—perhaps in as little as five minutes —on a small, high-speed tactical machine. The FPF must be supported by devices and methods that work together as a system to provide an up-dated target list from which fire plans can be made on call. The Formulator also needs the support of devices and procedures that will take a finished fire plan and disseminate it to the many points on the battlefield where it will be used.

Such an integrated scheme of devices and procedures is in prospect for the artillery. It is part of the Army's automatic data processing system (ADPS). USCONARC's effort to develop an ADPS for the field army is being directed especially toward the artillery sub-system—the first sub-system—which will be demonstrated at Fort Sill this summer. The U. S. Army Electronic Proving Ground is charged with analysis and scheduling.

This demonstration will include a small prototype of the artillery automatic processing sub-system. Concurrently with the development of the equipment and programs for the 1960-61 demonstration, the Artillery and Missile School and USAEPG will be working on a much-expanded system, scheduled for completion in 1963.

It is interesting to note how the several computing and data-processing functions are tied together into an artillery sub-system of the Army's larger projected ADPS. One such allocation includes the integration of computers at division artillery's headquarters and in its battalions. For the 1960-61

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Stromberg-Carlson-San Diego, in cooperation with the U.S. Marine Corps, has developed a revolutionary new tactical communications concept that will instantaneously transmit intelligence from forward observers and present a simultaneous tactical display to command. Known as BASIC (Battle Area Surveillance and Integrated Communications), it works this way:

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The same techniques and equipment used for the Marine Corps' BASIC concept are readily adaptable to a multitude of other military and commercial communications and display systems. For information about how BASIC techniques can solve your problems, contact Stromberg-Carlson-San Diego, Dept. A-29, 1895 Hancock Street, San Diego 12, California. Telephone CYpress 8-8331.

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demonstration there will probably be available three small- and one medium-scale machines. One possible allocation of these four computers would include the play of division artillery headquarters and one of the direct-support battalions.

The figure on page 58 shows a disposition for the computers. COMPAC is a small, 4,096-word, magnetic-core memory machine, roughly comparable to FADAC, being developed by the Signal Corps. BASICPAC, also a Signal Corps computer with the same magnetic-core memory, has a supplemental memory and storage capacity in the form of added memory modules and magnetic tapes. The magnetic tapes are ideally suited for up-dating inventory—which is essentially the problem in maintaining a target list for fire planning on demand.

An important aspect of the system—and one which the artillery should continue to stress—is the relative autonomy of each computer despite the potential that may exist for all to work together in the integrated system. We know that one large computer at some central location might be big enough and fast enough to compute all the problems to which we seek answers in forward tactical areas. However, we do not want to depend that much on communications. We don't wish to pass problems to the rear and wait—no matter how briefly—for computations to be performed and answers to be sent forward.

Transmission of data

At the current state of the art, the reliability and security of data transmission over the distances that are normal in a tactical situation are considerably less than the reliability of a single computer solving a problem as an individual piece of equipment. Fire control especially must be retained as a battalion and battery capability if the full speed and gain in accuracy of computers are to be realized in the most vital of all functions of artillery: placing that first round squarely on target. The capability for computing the requisite settings for the guns must be independent of data-transmission links; it must be available in a standard voice radio or telephone system.

If met messages and survey data can be fed into the fire-control computer, and the machine can put out ammunition-expended data, this is important and we welcome it; but to the fire direction center trying to respond rapidly and accurately to a call for fire (a planned fire or target of opportunity), it is only bonus.

The battalion computer in the figure is capable of technical fire control, fire planning, survey, ammunition accounting, and other computations. The battery fire control computers can also perform all these functions (digital computers are by definition general-purpose) but the battery machines are reserved for fire control—computing, with deadly accuracy, the settings required to fire the guns.

Any of the computers shown in the figure can work in a net, or separately. I call this the federal-state approach to computing. The battalion computer with its operator panels is the traffic cop of the battalion computer-communications system. It is the receptionist and the file clerk. It receives and accepts data, processes them, and is prepared to act upon them (compute) or pass them on to another machine for action.

The battalion computer protects the battery fire-control machines against interruption. It can hold fire requests until fire-control computers are free. It can consolidate reports of ammunition expended and forward them to division artillery on call. It can accept survey data for computation or for retransmission. Retransmission might be to the fire-control computer at battery, for example, as would be the case with coordinates of the battery and coordinates of a target. Retransmission of survey data might be to the computer at division artillery.

The battalion computer

The battalion computer can process target acquisition and artillery intelligence, making such compilations and deletions as criteria prescribe, prior to forwarding it to division artillery. The battalion computer is intensely concerned with the automatic data-processing aspects of the problem; it is also concerned with the technical computing of survey; it is little concerned with the technical aspects of fire-control computing except as a switching center.

Here let's make one thing clear. Within the battalion, the computers are all the same machine, whatever small one is adopted as the operational model for the artillery. For operator simplicity, the battalion computer will be controlled by any of three panels: an operations, a survey, or a cannon fire control panel. The battery fire-control computers will be equipped with the cannon fire-control panel; but if these particular machines were to be reassigned to the battalion computer task, they too could operate from either of the other two panels—operations or survey. Any of the three computers within the infantry division's direct-support battalion can be adjusted in a matter of two or three minutes, for any of the artillery problems, by the simple process of reading in a punched-paper tape directing the desired action. The same would be true of the two computers (one at the 8-inch battery and one at the Honest John battery) in the general-support battalion. In an armored division the same principles apply though the total number of computers may vary slightly.

A COMPUTER is not just another electronic device of marvelous capability. Most of the Army's modern electronic devices can be adapted into our equipment system and used effectively if the commander realizes the device's capabilities and limitations. He must know the computer's technical and logistical support needs. Though we orient our commanders in the functions of general equipment, they really don't need to know this. With computers it's different. Since there is no currently discernible limit to what the computers will do for him, the commander must understand how a computer's system of simple arithmetical steps turns out apparently complex and subtle answers; otherwise he cannot judge results nor push the machine into new tasks. The technical services and the manufacturers will probably meet design specifications, but the machine's functions must be based on the advice and needs of the customer—the combat-arms officer. Today's captains and majors must learn the theory of digital computing so that their needs in the way of fighting tools can be clearly defined to the technical services.

In the heat of battle we will have neither the time nor the patience to pick up the pieces one at a time to see where they fit. We must think through the hard problems now, while enjoying the good working conditions of Stateside assignments. If we do, when the chips are down we will be able to turn to these machines confident of obtaining valid answers.

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THE MONTH'S CEREBRATIONS

LIGHTEN THE USAR PAPERWORK LOAD

In the USAR unit the pace of paperwork is hectic

LT. BERTRAND N. BAUER

If you think reservists do nothing but attend lectures and march, while civilians and Regular Army advisors take care of what little there is of administration, supply and maintenance, you need enlightenment. If you've ever inspected a USAR unit's paperwork or have corresponded with a Reserve outfit, possibly your image has already been dispelled. I've been at Reserve paperwork for five years, and know that USAR administrators are highly competent soldiers who work with grim determination and at top speed to do as much as they possibly can at an impossible task.

Because a Reserve unit should be self-sufficient, reservists should handle their own administration. The best way to train them is by having them work at it. But to show you what we're up against, I'll use the AG section of a large Reserve headquarters as an example.

To start with, the work pace is hectic. A casual observer might think everyone had hit the panic button. Actually they are only exerting great efforts to cram as much work as possible into two hours. The list of tasks remaining never catches up with what can be done. Less urgent tasks keep reappearing, until finally realism forces postponement of new projects. They may never get started. Even so, all officers in the section (and many of the men) donate at least as much of their own time to paperwork as they put in on drills.

Organization charts conform to the TOE, but that's no guarantee that the administrative load can be carried. Always the most urgent factor is: Who possibly has the time for this particular job? If a good man has a spare five minutes left from a drill, *he* gets the job regardless of what section he's in or his MOS. People are borrowed and lent like mad, depending on whose claim of too much to do carries the greatest weight that night.

The time-honored fight over combat training between G3 and the desk soldiers is particularly acute. At summer camp, a day on the firing range, however necessary and enjoyable, means for AG people spending that night in the office. The combination of a strong G3 and a weak AG can raise hell with a unit's administration.

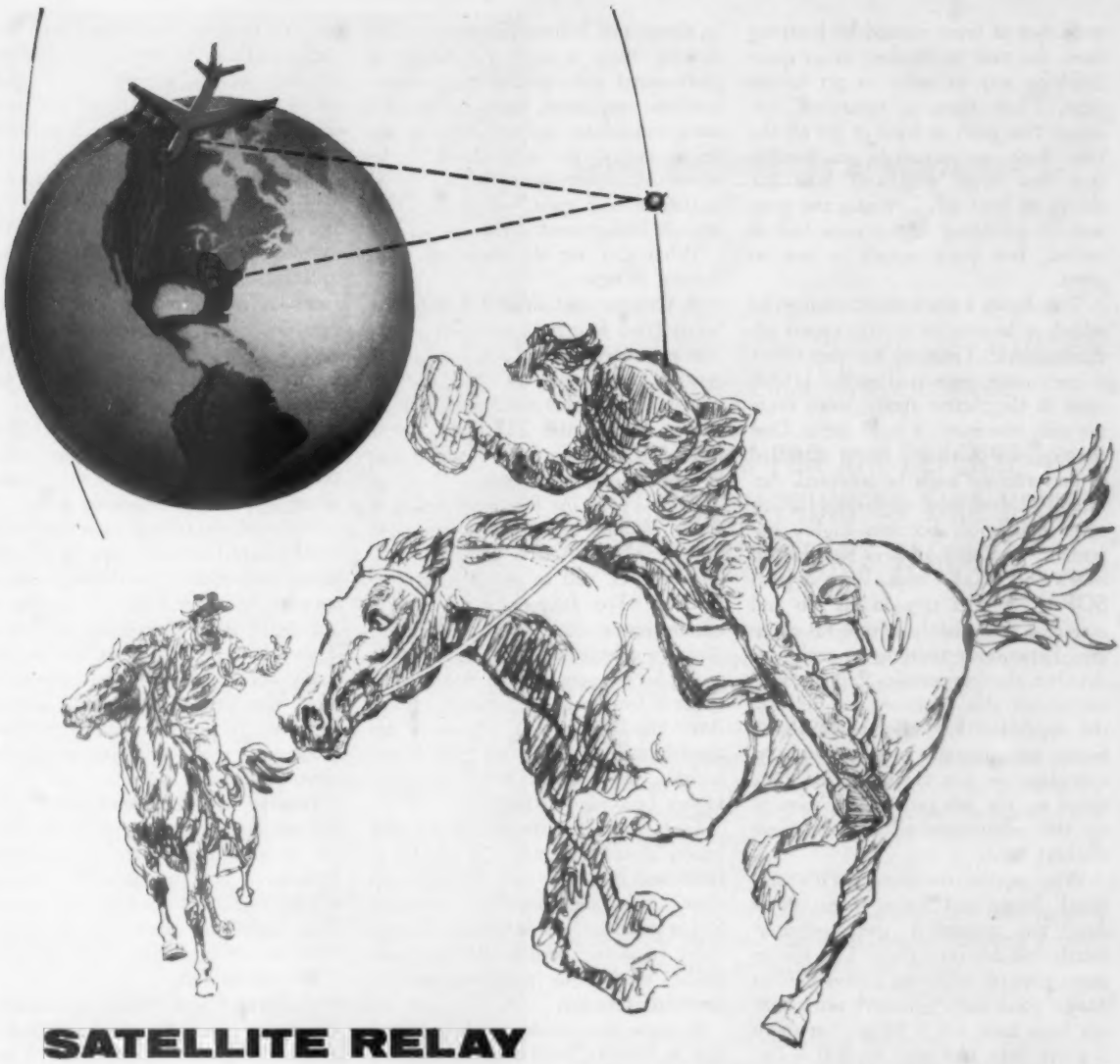
A little arithmetic indicates the source of the trouble. Forty-eight two-hour drills equal 96 hours (about two and a half work-weeks). Add two weeks of summer camp and you get four and a half per year. Thus a Reserve unit has about 10 per cent of the man-hours of an Active Army outfit. Is the workload reduced by 90 per cent to compensate for the reduction in man-hours? It might be by about 50 per cent, so we have five times as much work per man-hour as the Active Army. Even with that reduction, there is still a wide variety of tasks, and we need trained specialists for each type of job. No wonder the pace is hectic and there's so much overtime!

Do you find it hard to believe there's that much work? Here are some statistics on the workload of one unit's AG section. There are 300 201-files, each averaging 30 papers. During 1959 orders were cut for 1,000 soldiers and 60,000 sheets of mimeographed material were issued. It keeps track of 500 blank forms, and up to 1,500 copies of one kind. There are five shelves of regulations and training literature and four drawers of central files. It prepares a detailed quarterly payroll. (The summer camp payroll must be on a different form and is subject to another post's ground rules.) This unit has 30 staff sections, each of which must be kept informed of changes in regulations and manuals. Monthly requisitions for publications and forms run 30 to 300 line items, not to mention frequent special requisitions. Keeping track of the attendance of 300 assigned members is complicated by an annual turnover of about 50 per cent. Snarls ensue because reassignment orders are published by an Active Army headquarters 300 miles away. It must exercise extra supervision of obligors (those required by law to train with a USAR unit) subject to punishment for nonattendance. Efficiency reports are rendered on 150 officers at least annually, each requiring comment by raters and indorsers. This AG section has about 30 persons, each of whose regularly assigned hours is about 10 per cent of a full-time soldier's time. Therefore, all this work must be done by the equivalent of three Active Army soldiers!

Right here let me say that I enjoy my assignment. I'm a volunteer, like most of the others. Why gripe, then? For one reason, people at the top should have this general picture clearly in mind when they make decisions affecting a Reserve unit's paperwork load. For another, I believe the Active Army should help us. It would, if administrators being transferred to the Reserve knew what to expect in their new outfits. However, the Reserve unit can help itself to some extent.

What happens to soldiers under all this pressure? First, we note a high

This department is designed to accommodate the short, pithy and good-humored expression of ideas—radical and reactionary, new and old. We pay for all contributions published but you deserve to be put on notice that the rate of payment depends upon the originality of the subject and the quality of writing rather than length. This department is hungry for contributions, so shoot that good idea in . . . today.



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Under Project STEER, Bendix has prime responsibility for the entire communication system. STEER will use polar orbit satellites to relay commands and pilot messages between Air Force ground stations in the United States and SAC bombers ranging on global missions. The ideal vantage point of a satellite relay will permit utilization of line-of-sight advanced UHF techniques. The fading and interference problems inherent in the ionospheric transmissions of present HF long-range communications will be avoided.

Other space age projects at the Bendix Systems Division include magnetohydrodynamics, highly reliable radiation-resistant communication equipment, interpretation and prediction of infrared reconnaissance, new satellite stabilization techniques, and communication methods to penetrate the ionized shock layer surrounding hypersonic vehicles. Additional projects involve satellites for weather and ground infrared reconnaissance, and for radio navigation.

Opportunities are open to better engineers and scientists interested in participating in advanced space programs in an ideal scientific climate.

Bendix Systems Division
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incidence of error, caused by jumping from one task to another, never quite finishing any in order to get to the next. Then there is emotional collapse. You push so hard to get all the jobs done as accurately as possible that you must stop and wait for things to level off. Ignoring the pressure by plodding at the same task is easiest, but your output is not so great.

Two hours a week aren't enough in which to become or remain expert administrators. Training in paperwork is even more important in the USAR than in the Active Army, since there are only two hours a week for it. One consequence is that a lower standard of performance must be accepted. Another is that any expedient which saves man-hours becomes highly important. Two such devices are detailed SOPs and blank forms. With a good SOP a beginner can do his job and a veteran can quickly refresh his memory. Repetitious training in technical details is always necessary, but the SOP takes over this function and releases the supervisor for other tasks. Blank forms may become obsolete and accumulate in file cabinets, but they speed up the job and thus economize on the administrator's scarcest commodity: time.

Who makes up these SOPs and blank forms and keeps them up to date? You guessed it: the supervisor, usually on his own time. The investment pays off when he knows how to design good ones. (Reserve units cannot have local blank forms, but there is more than one way to skin a cat. Use the indexes to find a printed form that serves your purpose. Locally overprint an existing form. Use a form letter instead of a blank form. Design a new blank and ask higher headquarters to approve and publish it.)

One major factor partially overcomes these leadership difficulties. Fortunately, chiefs and Indians are very capable. Among them a high percentage of professional men—professors, graduate students, engineers, lawyers, business men, and others—are trained to accept responsibility, to work hard under minimum supervision, and to exercise initiative and good judgment. This civilian background is invaluable.

What can we do about all this? Several things.

A Reserve unit drills for only two hours (one fourth of a working day) but not every week. If staff coordination is necessary, the USAR unit necessarily requires more time than an Active Army outfit. Therefore, a realistic suspense date for a Reserve unit is about thirty days hence.

Every check list for completed staff action should include this question: "Applicable to Active Army, USAR, and/or NG, and so stated in the directive?" Too frequently, a Reserve administrator can't tell whether the directive affects him. The result: extra work in time-consuming conferences to see if five heads are better than one, then the request up channels for clarification. If this extra time is not feasible, the directive is ignored until higher headquarters roars.

Each check list for completed staff action should also ask: "If applies to Reserves, can the unit get the job done? Is its administration as simplified as possible?" As things stand, every order requiring additional paperwork pushes some other project down the reservist's task list.

Increase the number of administrators in Reserve units so as to improve paperwork. Perhaps the TOE can have flip-flop duty slots: for example, AG administrative specialist in Reserve status, some other section's specialist after mobilization. Many duty slots require on-the-job training which is difficult or impossible to undergo in Reserve status. Let the men in such slots do more or less related jobs now and contribute directly to the efficiency of their outfits. Before I'm laughed off the page, let me point out three actions where AG training is valuable regardless of mobilization slot: how to coordinate with general and special staffs to get advice and concurrences; how to use various channels of communication (command, administrative and technical, both formal and informal); how correct form helps everyone. In short, proper coordination, proper channels, proper form. The higher the headquarters, the more important this kind of training.

Another contribution is to add civilian administrative assistants, even though this conflicts with the mission of the self-sufficient Reserve unit.

Active Army comptrollers and other work-simplification experts should make staff visits to USAR units to transfer as much work as possible to automatic data processing machines. They should come from the Active Army because Reserve administrators don't have time to learn ADP systems or to set up programs for them. This holds great promise for improving Reserve paperwork.

Reserve administrators typically give last priority to office supplies. Why not set up supermarkets for such things? Perhaps a simple mail-order catalog would serve for units not near a post. This might save money for the Active Army as well make reservists happier.

Do you still think reservists just attend lectures and march? We could, and include time for combat training, if something were done to lighten our administrative load.

Lieutenant Bertrand N. Bauer, Adjutant General's Corps, USAR, *served 34 months in the Active Army, mostly in administrative capacities. A reservist for the past five years, he is with the headquarters of a logistical command.*

A COMMON MAP LANGUAGE FOR CIVILIAN AND SOLDIER

Why not apply the UTM grid coordinate system to commercial maps?

COL. JAMES P. ABBOTT

If and when enemy missiles, bombs, airborne troops or what have you hit us, probably a high percentage of each will land outside military installations and will be reported by civilians. Is it not then reasonable to assume the following late-hour telephone conversation between an excited citizen and a Pentagon duty officer?

"Pentagon? I want to report that a huge bomb landed near my house, at Fort Worth, ten minutes ago! It didn't explode."

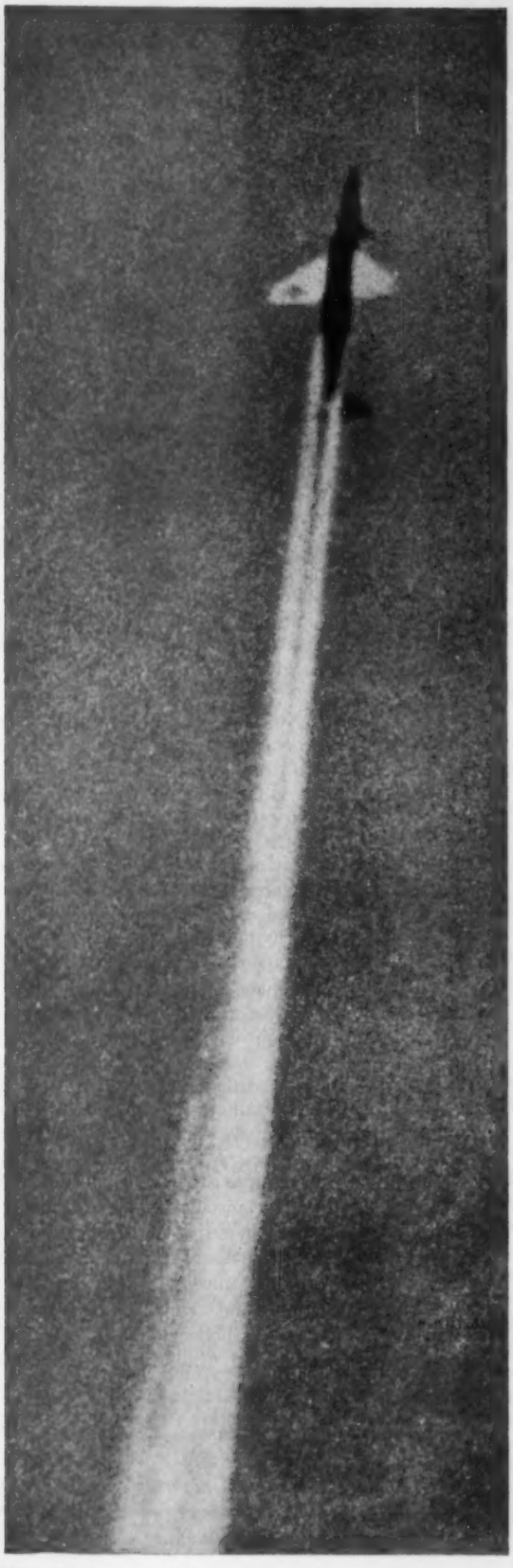
"Fort Worth, Texas?"

"No! Fort Worth, Virginia. The old Civil War fort in Fairfax County."

"Your name, please?"

"Jack Jones."

"OK, Mr. Jones. Where is Fort Worth located in Fairfax County?"



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"In the hills west of Alexandria, and south of Seminary Road."

"You mean the Seminary Road running south from the traffic circle on Shirley Highway at Shirlington? I live a block from Seminary Road in South Fairlington."

"No, not *that* Seminary Road. I mean the one running east and west between Shirley Highway and Quaker Lane on the west side of Alexandria."

"Sorry, Mr. Jones, but I'm new to Virginia. Tell me, please, how to get to Fort Worth from the Pentagon?"

"Shirley Highway runs on the west side of the Pentagon. Drive south on Shirley Highway to Leesburg Turnpike. Stay on Shirley Highway for nine tenths of a mile and you come to a Y where Shirley Highway underpasses Seminary Road. Turn left at the Y onto Seminary Road and drive east about one mile to where a narrow road joins Seminary Road from the south. Turn right on the narrow road and drive south a half mile and you're at Fort Worth. That's where I live. There are only a few houses here, and everyone knows me."

"Thank you, Mr. Jones. The bomb will be investigated without delay. Good night, sir."

Contrast that conversation with this one, the conditions being identical.

"Pentagon? I want to report that a huge bomb landed near my house, at Fort Worth, UTM Grid 18 UT 178 981, ten minutes ago! It didn't explode."

"Your name, please?"

"Jack Jones."

"OK, Mr. Jones. Are you certain you're located at Universal Transverse Mercator Grid coordinates 18 UT 178 981?"

"Universal Transverse Mercator? Yes, that's it. Sure, I'm certain. My son, in the Army Engineers, worked it out last year when he was putting those military grid lines, letters and numbers, on a gas-station road map to see if he could do it. Then he pasted those letters and numbers on my telephone box. He said that with them any Army outfit anywhere can locate my place exactly, within a hundred yards or so, that is, with no trouble at all. That's so, isn't it?"

"Certainly it's so, Mr. Jones. Thank you, and thank your son. The bomb will be investigated without delay. Good night, sir."

In the event of a national emergency, the importance to the armed forces and to the civilian community of having a common language for fixing the location of places on maps cannot be emphasized too strongly. Think of the resulting savings in time, confusion, and misunderstanding all around.

Thousands upon thousands of commercial maps and town plans are published annually in the United States, a considerable number being road maps distributed free by the major oil companies. Normally, each copy shows the producer's simple grid coordinate system for readily locating towns and cities through an alphabetical listing in an index. Streets are named on town plans.

I'll admit that applying UTM Grid lines to small-scale maps results in inaccuracies too great for local military operations. On the other hand, it is better for all concerned to be able to locate a point approximately, and quickly, than not to have the slightest idea where on a map to start looking.

No major difficulties should be experienced by publishers of commercial maps and town plans in substituting the UTM Grid coordinate system for their own simple ones, if they are given the essential information now in the hands of the Army Map Service. The cost to the Army would be small indeed as compared with the potential benefit to both the armed forces and the civilian populace.

Implementation of a program of substitution could be effected by and through Civil Defense organizations of the states. Local Civil Defense units, particularly those in towns and cities, could assist each citizen in learning and recording the UTM Grid coordinates of his home and his place of business. In this connection, each military installation could assist materially by displaying large-scale UTM gridded maps of its immediate vicinity. It could encourage soldiers residing off-post and civilian employees to record on their telephone instruments the UTM Grid coordinates of their homes.

Colonel James P. Abbott, USAR Retired, *during WWII was a War Department observer and intelligence officer for three armies. This is his fifth contribution.*

PICKUP AND DELIVERY for every kind of payload

Carrying men, materiel or missiles... Sikorsky's new "Skycrane" brings Pentomic era mobility to tactical operations

First of a family of "Flying Cranes," the Sikorsky S-60 (above) will soon be joined by the newest member: the twin-turbine S-64, with an eight-ton payload.

Carrying its loads externally, the "Skycrane" nimbly switches from troop-carrying pods to missiles, from supplies to construction equipment, and even to complete maintenance vans. It carries cargoes of any shape or size up to its lifting capacity. Termed a "prime mover," it brings the flexibility of the truck-tractor to air transport. And its simple skyhook pickup eliminates time-consuming loading and unloading, reduces turn-around time to a minimum.

The crane concept, tested and demonstrated for many months in the S-60, has opened the way for the current design and development of a family of Sikorsky turbocranes with payloads up to 40 tons.

A New World of Mobility by

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Stratford, Connecticut
A Division of United Aircraft Corporation

Irons in the Fire

Army Gets Radar Map Relayer

The Army's mapping ability may be improved by the delivery to the Signal Corps of a new airborne radar transfer system. Developed in cooperation between the Army and Motorola, Inc., under a $1.5 million R&D contract, the new system is said to be the first tactical air-to-ground sensor link which has been made available to the armed services. It will give the Army an air-to-ground radio link for relaying radar maps. Here's how it works: an encoder and transmitter (AN/AKT-16) in an airplane receive information from a companion radar (AN/APS-94), and transmit the data to a combination receiver-decoder-indicator (AN/TKQ-1) on the ground. Only seconds after the aircraft passes overhead, the map of that area is displayed on a special viewer on the ground and, by means of a new photographic technique, a permanent map is produced immediately on film.

New Mule Tested at Sill

A new tactical cargo-personnel carrier, designated XM443E1 "Mule," has completed evaluation tests at Fort Sill's Artillery and Missile School. Produced by Willys Motors, Inc., the new Mule is constructed of lightweight metal, resulting in a weight which is less than that of the Army's one-quarter-ton truck. The new vehicle can carry six passengers and can be converted to a cargo carrier by folding down the seats to form a platform. The Willys four-cylinder, horizontally-opposed air-cooled engine is located beneath the cargo deck. A conventional three-speed synchromesh transmission and two-speed transfer case are employed with the engine.

High-Speed Helicopter

Helicopters of the future may be able to attain speeds approaching 350 miles per hour and carry payloads of up to 50 tons. That's the prediction of Philip L. Michel, chief of advanced research, Sikorsky Aircraft. Addressing the annual meeting of the Institute of Aeronautical Sciences in New York, Mr. Michel said that while such performance increases are within the helicopter industry's capabilities their achievement will require greatly expanded industry and military research. According to Mr. Michel methods of achieving speeds from 200 to 230 mph "include greatly increasing negative blade twist to delay blade stall on the helicopter's retreating blade; increasing rotar solidity by adding more blades, and using such auxiliary forward propulsion as turbine engines with conventional airplane propellers." Mr. Michel described as extremely promising the future of the crane helicopter for carrying extended cargos. He predicted payloads of 50 tons by 1970.

15-Story Missile Tower

A portable missile service structure, which at 151 feet is believed to be the tallest pneumatic tire-mounted structure in this country, has been developed by the Army Engineers at Fort Belvoir, Va., for use at missile test sites. The 350,000-pound structure, also believed to be the heaviest of its kind, will be used to service missiles of the Redstone and Jupiter classes, or any missile up to 136 feet tall. The tower, which is mounted on two base trailers of six wheels each, was designed and built by the Noble Co., Oakland, Calif. Previous missile towers have been either fixed or rail-mounted. The new tower has six adjustable platforms for use in preparing a missile for flight. It also has two elevators, a complete intercom system, and a panic button.

Like a Hawk Takes to Water

The Army's SAM Hawk's solid-fueled rocket motor recently withstood a dramatic hot and cold water test and still came out firing. The Hawk motor, developed by Aerojet-General Corp. and undergoing qualification tests at ABMA, was immersed in four feet of water at 70 degrees Fahrenheit for a period of eight hours. When it was withdrawn and inspected for leakage, the propellant was still dry. The weather seal was then broken and the motor was resubmerged, drained without drying, and conditioned at zero degrees Fahrenheit for 48 hours. The motor was then fired successfully despite the fact that a thin coat of ice had formed on the propellant bore and the igniter basket.

Army Test Fires Pershing

The Army's newest and longest range surface-to-surface missile, the Pershing, has been test fired for the first time at Cape Canaveral, Fla. Only the first stage

The test vehicle Mule (center) is shown front view for comparison between the Army's one-quarter-ton (left) and three-quarter-ton (right) trucks.

FOUND:

an intellect that can think anywhere

The systems of tomorrow will require digital computers that can think *anywhere*—intellects that will remain superior in any environment.

ARMA—already producing inertial guidance systems for the ATLAS ICBM—has accepted the challenge and developed a lightweight, second-generation digital computer applicable to *all* types of navigation. It can be used in space, atmospheric, surface, subsurface and ground navigation, making possible programming flexibility.

This all-solid state computer, with *no moving parts* and using silicon semiconductors exclusively, has a memory that is non-volatile and has non-destructive readout. And this computer has substantially fewer parts than ARMA's first-generation production model, which has a test performance unequalled by any other digital computer.

An even more sophisticated third-generation computer, surpassing the reliability of the first two with still less weight, will be produced in the future by ARMA. The reliability of all three generations will be assured by thorough testing in ARMA's environmental facilities—the most complete in the industry.

ARMA, Garden City, N. Y., a division of American Bosch Arma Corp. . . . the future is our business.

Attention, Engineers: Write to E. C. Lester, Emp. Supv., about career openings in R & D programs.

AMERICAN BOSCH ARMA CORPORATION

Shown above in launch position is the Pershing missile, which the Army test fired recently at Cape Canaveral. The transporter-erector-launcher (TEL), supporting the missile above, can transport the missile to a site, erect it, and fire it within minutes.

of the two-stage, solid propellant ballistic missile was fired in the initial test. In keeping with the Army's practice of progressive firing objectives, the range was purposely limited. Lighter and smaller than the Redstone which it will replace, the Pershing will be used for general support of the field army. Reliability, short reaction time, simplification of equipment, and versatility in all types of terrain and climate are eventual goals of the Pershing system. The Pershing system has already undergone static firing tests. The recent test firing was made possible in in less than two years from the date of the original contract with the Martin Co., prime contractor.

New Generator Developed

The Army Engineers R&D Laboratories at Fort Belvoir, Va., have developed an improved 5-kw, 60-cycle generator set, said to be smaller and more compact than the set previously in use. Designed for use under every environmental condition experienced by Army tactical units, the set is powered by an air-cooled gasoline engine and is 40 per cent lighter than liquid-cooled models. The 468-pound set is capable of producing four kinds of electric service: 120 volt, 1 phase, 2 wire; 120/240 volt, 1 phase, 3 wire; 120 volt, 3 phase, 3 wire; and 120/208 volt, 3 phase, 4 wire. The power produced is of the quality needed for operation of communications, surveillance, and missile systems.

MATS Sets Transport Record

The Army team at Redstone Arsenal has teamed with an Air Force squadron to set what is believed to be a record-setting air shipment. Using the Air Force's largest transport (Douglas C-133 Cargomaster), the two services airlifted across country a 27-ton component of the Nike Zeus tracking system, believed to be the heaviest single piece ever air transported in this country. The test flight, from Chicago to Tulsa, Okla., was made to demonstrate the loadability of the 54,000-pound missiles component. Personnel from the Air Force helping to complete the air logistics record represented WESTAF's 84th Air Transport Squadron at Travis AFB, California.

Antenna Dish to Spot ICBM's

A giant parabolic antenna dish will be designed and manufactured by Fairchild Engine and Airplane Corp. as part of a radar system capable of tracking and identifying intercontinental ballistic missiles thousands of miles away. Fairchild will construct the 13,000-pound antenna dish under contract to Raytheon Co., prime contractor on the "Pincushion" radar unit. The dish will be 60 feet in diameter and entirely constructed of aluminum. The system is named Pincushion because of its microwave beam pattern formation. The 80-ton radar will keep a continuous fix on ICBM's for tracking and identification purposes. The five-story high antenna will help produce sharp, high-definition target pictures and will be capable of identifying specific warheads.

HOT SPARKS

The Lycoming T55-L-5 shaft turbine helicopter engine has been uprated from 1940 shaft horsepower to a military rating of 2200 shp with approval by the Army. The T-55 will power the new twin-engine Vertol YHC-1B Chinook.

Instruments for Industry, Inc., Hicksville, N. Y., is now conducting a seven-week course in electronic countermeasures for a selected group of Army and civilian electronics specialists. After completion of the course—popularly described as "electronics fighting electronics"—the graduates will become Army teachers.

Pratt and Whitney Aircraft has announced plans to widen its search for power by expanding its work on development and manufacture of fuel cells. Fuel cells are power plants which convert chemical energy into electricity directly within themselves—without the need of conventional electrical generators. The expanded program is part of a cooperative program between the aircraft company and Leesona Corp., first announced last fall.

Telectro Industries Corp., Long Island City, N. Y., announces a new seven-channel magnetic tape recorder which operates for 4 hours and 15 minutes on 4,800 feet of one-half inch tape. Built to military specifications, the recorder, Model 1855R, offers a high degree of reliability for communications center monitoring.

The Martin Co. reports that its SNAP-III, tiny atomic generator, is still producing electricity after a full year of continuous operation. Originally, the unit was only intended to demonstrate maintenance-free operation over a 140-day period. The generator, which has survived the types of jolts it would undergo in a rocket ride into space, contains no moving parts and needs no maintenance during operation.

Using a pocket image metascope, two soldiers demonstrate how to detail study a tactical map in pitch darkness. The man on the right holds a small infrared flashlight from which no visible light shows. Use of this equipment is covered in instruction by the Special Purpose Weapons Committee at Fort Benning.

THE MONTH'S BOOKS

Broad-Gauged History of War

WAR IN THE MODERN WORLD
By Theodore Ropp
Duke University Press, 1959
400 Pages; Index; $10.00

Reviewed by
LT. COL. LOUIS MORTON, USAR, *who directed the preparation of the subseries on the war in the Pacific, wrote two of its volumes, and now teaches military history at Dartmouth College.*

One of the signs of these times of universal concern with the issues of war and peace is the steady stream of books and articles dealing with the nature, theory, and history of warfare. Much of this literature is of transitory interest only, journalistic or partisan in nature, and containing little of permanent value. Some of it, however, is the result of scholarship of a high caliber and constitutes a major contribution to our knowledge of war and to the great issues of our time. *War in the Modern World* is such a book. Written by a professor of history who understands war and has taught military history to his classes at Duke University for almost 20 years, *War in the Modern World* is that rare work that successfully meets the challenges of two demanding professions: the historical and the military.

Surveys of the history of war are not uncommon, but few such surveys attempt to relate military developments to the political, social, economic, and technological aspects of society. To do this is a peculiarly difficult task, requiring at the same time a thorough knowledge of history, an understanding of the interrelationships of the various elements of society, and a capacity for generalization. This is the task Professor Ropp set for himself and he has succeeded admirably on the whole. In less than 400 pages, he has traced the development of the art of war, including military technology, concepts of organization, and theories of warfare, from the dawn of the modern era early in the fifteenth century to the present. At each stage, he has carefully related military to political and social change. The result is a broad-gauged history of the modern world in which war emerges as one of the dominant factors shaping Western society.

In a work of this scope, it would have been most difficult to treat specific military campaigns or battles in any systematic fashion. To be useful, descriptions of operations must be detailed, and there is little room for such detail in a general history. But Professor Ropp is too experienced a student of military affairs to ignore the battlefield and his book is filled with references to specific operations that serve to illustrate and emphasize the general points he wishes to make. It is filled also with the kind of details about military life and customs that one scarcely expects to find in so broad a survey.

Another merit of *War in the Modern World* is the careful attention given to the writings of the major military theorists and practitioners from Machiavelli to Douhet. The ideas of these men are fully analyzed, extensively quoted, and related to the political philosophy and social organization of the time. In the author's view, this aspect of the book serves in a way "as an introduction to the major military classics."

The book has other virtues, too. It is carefully researched, well organized, and moves at a fast pace. Not the least of its merits, and one that every serious student will find extremely useful, are the bibliographical footnotes liberally interspersed throughout the volume. Strictly speaking, these are not footnotes at all, but brief critical bibliographies surveying the major literature in four languages on a given subject. Ordinarily, such notes would be more useful at the end of the text, where they could be consulted at leisure. Scattered as they are creates a certain amount of repetition and difficulty in locating appropriate references. But this last problem is partly overcome by an index which serves as a guide to the works cited there as well as to the text.

It would be too much to expect that so ambitious a work covering so large an area would be without faults. There is much in the book, especially in matters of balance and emphasis, with which I would take exception, and much that is not in it that ought to be. And there is no excuse in a book priced as high as this one for omitting altogether the maps and illustrations so essential in a military work. Still, this is an excellent work, not "the best yet produced anywhere" as Liddell Hart announces on the jacket, but one that every professional officer will want for his library.

Evidence in Courts-Martial

MILITARY EVIDENCE
By Capt. Joe H. Munster, USN, and Capt. Murl A. Larkin, USN
Bobbs-Merrill Company, 1959
490 Pages; Index; $10.00

Reviewed by
COL. JAMES K. GAYNOR, JAGC, *who is Chief of the Legislative Division, Office of the Chief of Legislative Liaison, Office of the Secretary of the Army.*

Probably more treatises on military law have been published since the Uniform Code of Military Justice became effective in 1951 than during the preceding hundred years. A few were good, many left something to be desired. The experienced military lawyer thus is inclined to have initial reservations about each new treatise that appears.

This latest one was prepared by two Navy officers who are experienced lawyers. It does not cover the entire field of military law but only one segment, albeit a most important one: evidence in court-martial practice.

The rules of evidence which must be followed in court proceedings often confuse the layman. It may be difficult to understand why the weighers of the facts, whether members of a court-martial or a civilian jury, should not be permitted to consider certain information which may be vital to the issue.

The rules applied in Anglo-American jurisdictions have been hundreds of years in development. Their basic purpose is to insure that only evidence which meets strict tests of reliability is considered in determining the outcome of a trial. In a criminal trial, the rules of evidence provide fundamental safeguards for the accused.

Article 36 of UCMJ provides that the President shall prescribe the "modes of proof" in trials by courts-martial—that is, he shall prescribe the rules of evidence—and he shall, "so far as he deems practicable, apply the principles of law and the rules of evidence generally recognized in the trial of criminal cases in the United States district courts." The President has prescribed these rules of evidence in the *Manual for Courts-Martial*. They are set out in Chapter XXVII of the 1951 edition, and that chapter is well written. A law professor once told me he advises his students to use this chapter as a point of departure in under-

Selected Check List of the Month's Books

This run-down of some of the books received during the month preceding our deadline is to give our readers who like to follow current literature a monthly check list of the most important, useful and potentially popular books. Any of these titles may be purchased through the Combat Forces Book Service.

CHURCHILL: THE WALK WITH DESTINY. Compiled and designed by H. Tatlock Miller & Loudon Sainthill. The Macmillan Company, 1959. 256 Pages; $7.95. A photographic biography of Britain's wartime Prime Minister, published on his 85th anniversary. Photos, from childhood to old age, are superb, and this volume (10 x 13) is a masterpiece of bookmaking.

THE CITY THAT WOULD NOT DIE. By Richard Collier. E. P. Dutton & Company, 1960. 280 Pages; Illustrated; Maps; $4.50. The bombing of London on the night of 10-11 May 1941, during which 505 German planes killed 1,436 persons, injured 1,800, and started some 2,200 fires. The author interviewed 596 men and women to get his story.

FOUNTAIN OF THE ELEPHANTS. By Brig. Desmond Young. Harper & Brothers, 1960. 319 Pages; Illustrated; Maps; Index; $5.00. Biography of Benoit de Boigne, little known soldier of fortune whose career in India played a great part in consolidating warring states and in the history of the British Empire in the East. By the biographer of Rommel.

GERMAN SECRET WEAPONS OF WORLD WAR 2. By Rudolf Lusar. Philosophical Library, 1959. 264 Pages; Illustrated; Index; $10.00. An exposition of Germany's immense effort in weapons R&D. While many were used against Americans, some were still classified when the war ended and had some part in developing today's weapons.

KATE: THE JOURNAL OF A CONFEDERATE NURSE. By Kate Cumming. Louisiana State University Press, 1959. 321 Pages; Index; $6.00. Diary of a woman who was in an ideal position to observe the soldier, civilian attitudes, medical practices, and hospital administration, all of which she recorded faithfully.

THE KRONSTADT REBELLION. By Emanuel Pollack. Philosophical Library, 1959. 98 Pages; Index; $3.00. The first organized revolt against the Bolsheviki: the rebellion led by sailors and officers of the Baltic Fleet in 1921.

LEADERSHIP, PSYCHOLOGY, AND ORGANIZATIONAL BEHAVIOR. By Bernard M. Bass. Harper & Brothers, 1959. 548 Pages; Illustrated; Index. The author, professor of psychology at LSU, says his purpose is "to gather together some of what we know about leadership and to organize this knowledge into a set of generalizations held together by reason as well as experiment."

THE STORY OF THE U. S. AIR FORCE ACADEMY. By MSgt. Lawrence C. Landis, USAF. Rinehart & Company, 1960. 224 Pages; Illustrated; Index; $3.95. The first comprehensive work about our youngest service academy. Tells how to get appointments, how cadets live, study and train.

TRAFALGAR. By Oliver Warner. The Macmillan Company, 1959. 184 Pages; Illustrated; Index; $4.50. A close-up account of Nelson's great victory, in the long perspective both of his personal career and of the struggle for naval supremacy during the Napoleonic wars.

UNIFORMED SERVICES ALMANAC, 1960. Compiled and edited by Lee E. Sharff, Wayne Hawkins & Joseph Young. Privately published, 1960. 138 Pages; $1.00. Up-to-date edition of the serviceman's personal handbook: dependents' medical benefits, allotments, insurance, dependency and indemnity compensation, veteran benefits and preference, federal and state income taxes, social security, retirement, the Reserve forces, pay tables, statistics on the Army, and much more.

standing the rules of evidence.

The U. S. Court of Military Appeals has not always agreed with the provisions of the Manual. In some cases the Court has said that provisions violate fundamental rights guaranteed by the Constitution. In other cases, it has ruled that provisions of MCM conflict with UCMJ, which was enacted by Congress.

More than a dozen provisions of MCM relating to evidence have been changed by decisions of USCMA. The military lawyer must keep constantly abreast of the Court's latest pronouncements in order that he may handle cases in a proper manner. It is almost impossible for the lay officer who occasionally must act as counsel to keep abreast of the changes as new decisions come down.

What I have said points to the vital need for an authoritative treatment of the rules of evidence as they are applied in court-martial practice. The authors of this book have provided a work which will go far toward meeting that need.

Military Evidence is written in a style acceptable to the lawyer yet understandable to the layman. The text is amply supported by citations of pronouncements of the CMA and service boards of review, and where military precedent does not exist, by citations of opinions by civilian courts.

The authors do not always follow the sequence of topics in Chapter XXVII of MCM, but they use it as a starting point. Their introductory chapters provide a general basis for the discussions of all facets of military evidence, and as each subject is treated they refer to the corresponding provision of the Manual.

In the words of Chief Judge Robert E. Quinn of the Court of Military Appeals, who contributes the foreword, the authors "have established a useful and understandable pattern of approach." The exhaustive research which was done in preparing this treatise will result in substantial time-saving by military lawyers who use it. It should be extremely useful to the layman who seeks a quick answer to a question of evidence.

A word of warning, of course, must be given the layman. The law of evidence, particularly that applicable in court-martial practice, is subject to further refinement. No doubt there will be many, many more decisions by CMA. Some may, in one way or another, affect the law of evidence in military practice. The military lawyer will be fully aware of these refinements and will search the reports and advance sheets for the latest opinions.

When the layman faces a crucial problem, it's best for him to consult a lawyer friend for the latest expression by the Court. No blame can be placed on these authors if they have been unable to anticipate future views of military tribunals.

I think Captains Munster and Larkin have come up with a treatise that will prove of lasting value.

Battle for Men's Minds

THE WEAPON ON THE WALL
By Murray Dyer
The Johns Hopkins Press, 1959
269 Pages; Index; $6.00

Reviewed by
LT. COL. ROBERT N. WALKER, USAR, *who is a civilian specialist in psychological warfare with the Department of the Army.*

Murray Dyer's rethinking of psychological warfare pleads for understanding of and acceptance by Americans of the tremendous potential which this weapon (broadened by calling it "political communication") offers as a vital part of our arsenal under the current queasy conditions of neither war nor peace. The title, *The Weapon on the Wall*, implies that psywar, as understood by most soldiers, is now a weapon on the wall when it should be in our hands. Political communication is to explain and interpret the action and policy of our government to alien peoples.

The purpose of psychological warfare is to change men's minds in lieu of blowing them to pieces. This simple idea has had to wait a long time for acceptance—if in fact it is fully accepted today—by those in authority who mold our national policies in diplomacy and defense. No justification appears needed to prove that propaganda and related actions may be used with great effect to influence favorably or unfavorably the emotions, attitudes and actions of foreign groups to support or oppose the accomplishment of our national aims and objectives. However, how and in what manner this ideological weapon is to be used has not yet been definitely determined. Writers endeavor to give a broad-brush canvas of what it is we want to do and what the ground rules shall be.

Details of the requirements for political communication as posited by Mr. Dyer must be sought in entirety by readers of this provocative book. In brief, the author contends that political communication requires White House action to establish it as a "coequal partner with the other three instruments of a sovereign state: the political, the economic and the military." That the impasse between the Departments of State and Defense as to which shall be supreme in this connection must be resolved (a recent decision—which Mr. Dyer's deadline prevented him from using—has given total responsibility for psywar operations in a combat theater to the military commander). That the weapon is auxiliary only, never primary—"the minds of men are not changed by words—they are changed under the impact of dynamic ideas translated into concrete action that proves the conviction behind the idea." That Soviet political communication has been "flexible, responsive to initiative, and supported by all their resources, capabilities, and their whole machinery of government," while the "Topsy-like" undirected and unplanned growth of our own political communication has not been particularly impressive. Even now, he says, it has not been given the structure to make it the effective instrument which is required, perhaps for our very survival.

As an instance of muffed opportunity, Mr. Dyer cites the A-bombing of Japan in which political communication with both our allies and our enemies was completely neglected by us. In contrast, he cites the USSR's exploitation of the Sputniks, with their tremendous worldwide psychological impact favorable to the Soviets.

By way of extenuation for the somewhat harsh words Mr. Dyer uses in describing the U. S. Army's psywar performance, it should be pointed out that noteworthy psywar activities are currently under way at the Army's Special Warfare Center at Fort Bragg. There, cadres are being trained for field operations in combat zones, the hard-learned lessons of our past military actions are being studied, and the attempt is being made to improve our posture for future psywar capabilities. For example, teams of natives of countries in Southeast Asia are being trained for psywar activities in their own areas.

In conclusion, Mr. Dyer believes political communication must be "directed in terms of our over-all national objectives and not in terms merely of diplomatic or military aspects of policy," and that national policy in both peace and war demands an effective and truthful mouthpiece to favorably influence world opinion in our behalf. His work is a forceful contribution to the literature of preventive war; effective use of this cold war weapon may perhaps obviate the need for its use in a shooting war. The battle for the minds of men has been joined: we will neglect our expertise with this weapon at our peril.

Ideal Gift Package

THE WEST POINT ATLAS OF AMERICAN WARS
Col. Vincent J. Esposito, Chief Editor
Frederick A. Praeger, 1959
Two volumes; 336 and 554 Pages; $47.50

Reviewed by
N. J. ANTHONY, *an Associate Editor of* ARMY, *who is also on the editorial board of the American Military Institute.*

Few American soldiers are unfamiliar with *American Campaigns*, by Colonel Matthew Forney Steele. The chapters of his text volume are lectures he delivered at Leavenworth during the early 1900s. His enduring work, still the best study ever published of American campaigns up to 1900, has been used since 1939 by cadets in West Point's course in the History of the Military Art. The maps which form the original second volume, however, are frightful (Steele couldn't get good ones), so USMA's instructors in 1941 set about drafting their own. You couldn't buy this atlas because of legal restrictions.

This West Point atlas (158 maps) is directly reproduced to form the first volume of the work under review. All maps are in conventional red and blue, man-made and natural terrain features are clear, with elevations expressed in hachure rather than contour lines. Modern symbols for units are used, with names of commanders down to brigade. These maps are better to use than even the Civil War official atlas because they omit the extraneous. This volume treats of campaigns rather than battles. You won't find actions like Wilsons Creek or Pea Ridge in detail because Steele didn't follow such a pattern. It begins with Colonial actions in 1745 and ends with the Spanish-American War. To indicate detail: of the 14 maps relating to the Gettysburg campaign, six show the situation of the *battle* at different *hours*.

Volume II has 71 maps for World War I, 168 for WWII, 15 for Korea. Some have green added, and the book is almost twice the thickness of the first volume. Unlike the first, this one includes the actions of all nations involved, in every theater of the world. Besides, it portrays sea actions which one misses in the first volume (Steele didn't stress the naval phases).

The title is somewhat misleading. This is more than an atlas. Maps are on right-hand pages. Opposite them the editors supply an excellent narrative of all our wars that is a model of conciseness. In addition, they offer reading lists and chronological charts that enable the user to fix the period in history of any action since 1862. Pages are 14 inches wide by 10 inches deep, and together both volumes are three inches thick. Anyone who knows something of four-color printing will tell you the price is right. All in all, a beautiful job of book-making.

Now you can have within easy reach maps to orient you in re-fighting any campaign. This is an ideal gift package, especially for the Civil War buff.

War Against the World

THE SIEGE AT PEKING
By Peter Fleming
Harper & Brothers, 1959
273 Pages; Illustrated; Index; $4.00

Reviewed by
LT. COL. PAUL M. A. LINEBARGER, USAR, *who is Professor of Asiatic Politics at the School of Advanced International Studies of The Johns Hopkins University.*

Twice within 60 years, huge swarms of Chinese have frothed out of China, ready to fight the entire civilized world. In each case the world met them and defeated them with international armies. One instance was the Boxer siege against Peking and the foreign legations; the other was the Chinese attack in Korea. In both instances the Chinese were stopped. One wonders about the third time.

The Boxer story has often been told. Fleming brings to his account the skills of a professional writer of the highest quality. Though he uses scholarly talents, he never lets them get in the way of his narrative. The story is genuinely popular in tone, and Fleming's account is the most readable work now available, though it is by no means as scholarly as Chester Tan's *The Boxer Catastrophe* or the somewhat earlier work by G. Nye Steiger.

Soldiers will remember Peter Fleming's superb characterizations and gifts of lively

narrrative from his *Operation Sea Lion*, the story of Hitler's abortive attempt to invade Britain. This book is written in much the same vein. Himself a former colonel, Fleming finds staff intrigues and personalities even more amusing than campaigns. He tells the story in such a way as to belittle everyone: the Chinese aggressors and the foreign defenders.

The Americans get their fair share of the credit, though they must absorb the ridicule as well. Massacres of Christian Chinese had reached a high point in May 1900, but only on 31 May and 3 June did small forces arrive to guard the legations. U. S. marines were included.

The Peking government never officially declared war on the world in 1900; it used the officially encouraged Boxers as a pretext. The Peking government never officially declared war on the world in 1950; it used the "People's Volunteer Forces" as a pretext. Civilizations changed in China; governments rose and fell; but the same Chinese ruses were employed. In both instances China escaped the responsibility for a real war, while having the satisfaction of starting a fight which the Chinese might not wish to finish. In the case of the Boxers the war lasted only until 14 August, when the Allied forces raced one another into Peking. Fleming notes that an American soldier named Calvin P. Titus was first on the city wall, but he gives the British real credit for the delivery of the city.

The light, delightfully easy reading of the book obscures the tragedy which lies behind it. The atrocities of the Chinese sprang then, as they do now, from resentment and mass frenzy. The deeper tragedy is the loss of a "civilized world" which could unite against aggression. Fleming is so sophisticated that he cannot really condemn the Chinese. He urbanely dismisses Western and Japanese heroism as so much "G. A. Henty"—Henty being a British boys' writer who believed in such things as the Empire, decency, law, and God Almighty. The Chinese loss of moral values is cultural, and approaches psychotic proportions when the Chinese masses are overstimulated and misled; the Western loss of moral values is cultural, but in a different way. The elegance of disbelief is a factor.

American readers will note that between the Army and the Marine Corps, Fleming thinks that the Marines got the worst of it. He says General Chaffee was anathema to the Marines. "They had been almost two months in North China before the first Army units disembarked; they had endured the hardships and perils of the Seymour expedition and the Siege. Yet on the march to Peking Chaffee awarded them humble and unrewarding roles . . . and when he reached Peking he gave (until his orders were countermanded as a result of protests in Washington) the privilege of guarding his country's Legation to the Army, not to the Corps which had saved it from destruction."

Fleming has likes and grudges among his sources. The personalities, foreign and Chinese, emerge as real people; the reader shares in the author's enthusiastic reconstruction of the Boxer fighting. Fleming has a wonderful time with the whole show; so will the reader. But the thoughtful reader will not only wonder about the Boxers' outlook on life—he will wonder about Fleming's, too.

Our First War

WILLIAM DIAMOND'S DRUM
By Arthur Bernon Tourtellot
Doubleday & Company, 1959
311 Pages; Illustrated; Maps; Index; $5.95

TURNCOATS, TRAITORS AND HEROES
By Col. John Bakeless
J. B. Lippincott Company, 1959
406 Pages; Index; $6.50

Reviewed by
LYNN MONTROSS, *who has written several works on military history, including two on the American Revolutionary War.*

William Diamond's Drum is an excellent blow-by-blow account of events on that April morning in 1775 when the cold war of the American Revolution turned into the shooting war. Of special interest to military readers are well-documented descriptions of the day's tactical developments.

Who fired the first shot? That long-labored question is answered competently by Mr. Tourtellot. Instead of bothering about a first musket shot or two of vague origin and innocuous results, he goes straight to the heart of the matter. The authentic "shot heard 'round the world," he contends, was the one that drew first blood; and there can be no doubt that the British fired it.

Paradoxical as it may seem, the virtually untrained Yankee militiamen conducted themselves like regulars at the moment of crisis. In good order, the 38 men of Captain John Parker's company obeyed his order to disperse without firing a shot. The five companies of British regulars, on the contrary, behaved like a hysterical mob.

This is on the testimony of their commander, Major John Pitcairn, who also had given orders that no shots were to be fired. The militiamen were merely to be surrounded and dispersed.

Most accounts agree that the Redcoats broke ranks and fired upon the dispersing militiamen at ranges so short that even the notoriously poor British marksmen couldn't miss altogether. Pitcairn rode among them, shouting angry commands that went unheeded. When the dense clouds of powder smoke cleared, eight dead Americans were stretched out on the grass and nine had been wounded.

The fact that most of the provincials were shot in the back is significant. A few returned the enemy's fire while withdrawing, but with so little effect that the British casualties consisted of one man slightly wounded in the leg.

The British occupation troops, for their part, had also been admonished not to take the aggressor's role. Thus the one-sided tactical victory at Lexington was immediately deplored by the victors as a political defeat.

This does not explain why Captain Parker's men awaited the British vanguard at Lexington, which had no military value. At an earlier assembly that night, shortly after Paul Revere spread the alarm, 77 Minute Men of the company decided, according to Parker, "not to be discovered nor meddle or make with said Regular troops." About four hours later, however, 38 of them responded to the summons of the company drummer, young William Diamond, for the suicidal stand on the village green.

Author Tourtellot explains this about-face with a bold conjecture. He believes that Parker changed his mind after conferring with Samuel Adams, that arch revolutionist, who had found a refuge along with John Hancock in the home of the Reverend Jonas Clarke on the outskirts of Lexington. There is no historical support for the hypothesis that Adams sacrificed the Lexington militiamen to bring on a shooting war, and the reader must decide for himself whether to agree. I must confess I am not convinced.

Author and publisher have combined in *William Diamond's Drum* to bring out one of the year's most handsome as well as readable books. Good paper and printing, excellent maps and well-chosen illustrations contribute to an attractive format.

Turncoats, Traitors and Heroes combines the suspense of a spy thriller and the scholarship of a historical study. Despite its title, the book is largely a survey of methods of gaining military intelligence during the American Revolution. The fact that some of the spies happened also to be turncoats, traitors or heroes is incidental.

Soldiers do not have to be reminded that accurate, timely intelligence may mean the difference between victory and defeat. As a historical example, a suspected Tory spy was seized by the Americans shortly before their crossing of the Delaware to attack Trenton. General Washington insisted on questioning the trembling wretch himself in privacy. That night, however, he "escaped" before his scheduled court-martial and hanging in the morning.

That the supposed turncoat was actually Washington's own spy—a dedicated patriot bringing last-minute intelligence of the Hessians at Trenton—did not become known until after the war.

It was not the only time that the Father of His Country found it necessary

to deceive his own army as well as the enemy. As a spymaster, Washington was a grim realist. He had no objections even to dealing with double spies—those merchants of military secrets who sold information to both sides.

It is a bit disillusioning to learn that codes, cyphers and invisible ink were so primitive during the Revolution that today's cryptanalysts could have cracked most of the products in short order. One of the favorite British cyphers was based on a reversed alphabet in which *a* and *z* traded places. In order to avoid giving frequency clues, the cypher changed in each line, using *y* for *a* in the second line, *x* in the third. Upon reaching *o*, the process started all over again.

Washington found the British worthy foemen in underground warfare. One of their best operators was Ann Bates, a Philadelphia schoolma'am and spinster who turned Tory with a vengeance after a belated romance and marriage to a British artificer in the artillery train. Posing as a pedlar, she traveled widely behind the American lines with a sharp eye for information useful to General Sir Henry Clinton. In the end, for all her valuable services, she felt the sharp tooth of ingratitude. Deserted by her husband after the war, she implored the British to pay her a promised annual pension of ten pounds. "Had I doon half as much for the Scruff of Mankind, I mean the Rabls," she wrote in a letter indicating she was a better spy than schoolma'am, "I should not be thus Left to Parish."

A British colonel came to Ann's rescue, but her distress was exceptional. Most of the spies seem to have settled down to a comfortable and respectable life after the war. Colonel Bakeless has told their story in an eminently readable book containing 21 pages of chapter notes listing sources.

An Army *is* Essential

MILITARY AND INDUSTRIAL REVOLUTION OF OUR TIME
By Fritz Sternberg
Frederick A. Praeger, 1959
359 Pages; Index; $5.75

Reviewed by
COL. H. D. KEHM, *who has been Assistant Professor of Economics and Government, USMA; instructor at CGSC; and Assistant Commandant, The Strategic Intelligence School.*

This book will appeal to the dedicated soldier because it makes clear why the United States must have an army for the effective pursuit of its foreign policy. It has much more to offer in addition.

The main thesis of this Clausewitzian treatise is that we are in the midst of the greatest military revolution of all time—a revolution that is unprecedented in the scope and speed of weapons development, has drastically changed military organization and tactics, and affects every country in the world. Furthermore, says the author, this revolution is unique because it is occurring in time of peace and began before the industrial revolution which was caused by the same atomic bomb that started the military revolution.

Dr. Sternberg analyzes the differences between these revolutions and their predecessors. He considers them in the context of the world situation and the policies of the United States, Europe, the Soviets, China and the underdeveloped countries. From this analysis he develops conclusions as to what the U. S. and the Free World need to do if they wish to be able play a decisive role in world affairs. The author's education, experience, and his many previous writings testify that he is well equipped to speak with a voice that should be heeded.

A sample of the author's views on the need for an army: ". . . there is a growing realization in the United States that to concentrate too exclusively on nuclear armaments and on the Air Force is a mistake which threatens to hamper U. S. policy . . ." and "It is hoped that . . . a number of U. S. divisions are being made ready to intervene rapidly at any threatened point throughout the world." He backs up his point on the need for an army by noting that ever since WWII the USSR has continued to maintain a large land force and uses it as a political sanction. One can speculate that he would probably label as a piece of political deception Khrushchev's recent remark that large land forces are not needed in the atomic missile age and hence the Soviets might disarm unilaterally.

The book is full of other carefully supported and sobering conclusions. For example, as to small wars: "In short, although the still enormous power of the U. S. nuclear arms remains a deterrent against an all-out attack on the U. S. itself, it can no longer be considered a deterrent against minor expansionist attempts undertaken by the Russians or their allies."

On the significance of Soviet nuclear and scientific developments: "The stark consequence of this is that if they want to survive, the United States and the other countries of the Western World must adjust themselves to a completely new balance of power."

The author documents the capabilities and limitations of the Soviet Union in military and economic power. His picture shows that there is room neither for complacency nor stark fear even though reappraisals, some of them perhaps agonizing, must be made.

His views on the importance of the underdeveloped areas are interesting, particularly his conviction that the Free World *can* aid these countries effectively at acceptable costs and must do so if these new nations are to be kept from Communism.

This review has commented primarily on the military concepts brought out in the book. However, it is equally interesting in its treatment of the social and political significance of automation and other features of the industrial revolution and in the way it shows the interrelation of political, military and economic factors and developments and their significance for U. S. policy. Such materials provide the ingredients for a stimulating punch the author has prepared for students of contemporary politico-military affairs.

Help for Military Writers

GUIDE FOR THE MILITARY WRITER
By John W. Gause
The Stackpole Company, 1960
263 Pages; Illustrated; Index; $3.95

Reviewed by
COL. ARTHUR SYMONS, USAR, *who has written seven books, six of them on military subjects.*

This author, a publications editor at The Infantry School, is a brave man. Writing a book on how to write takes the same brand of courage as cooking a meal for the banquet at a chefs' convention; it is an invitation for brickbats from the experts—and who isn't an expert on military writing?

The book is complete, and should be helpful even for those who have been at the business for years. Some might believe the chapter "Grammar and Mechanics" is too elementary for inclusion in a work for adults who have graduated from high school, but not those of us who have seen the earnest efforts of otherwise effective officers and first-three-graders who invent new ways to be wrong.

The author has been through the mill, and obviously knows the difference between a staff study and a DF, and an Army non-military letter and the reply to a Congressional inquiry. More important, his instructions are clear and understandable. It is rare to find a book of this type that considers such facets as indexing and research, but Gause does.

As a purely personal reaction, I take issue with only one of the author's instructions. He recommends that misnomers, nicknames, slang expressions, or words used in a special way be enclosed in quotes, and uses as an example: "He was a real 'doughboy'." Not in any copy I ever edit, Mr. Gause, even though I was taught to do it way back in the sixth grade at quote the little red schoolhouse unquote.

Would-be authors can't invest $3.95 more wisely; established and experienced military writers could do worse than have this text on their reference shelves.

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The Association of the U. S. Army shall be an organization wherein all who are in accord with its objectives may join in the exchange of ideas and information on military matters, and in fostering, supporting, and advocating the legitimate and proper role of the Army of the United States and of all its elements, branches, and components in providing for and assuring the Nation's military security.

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SACRAMENTO, CALIF. Brig. Gen. Alfred M. Shearer, left, Past President of Mother Lode Chapter, receives from President George H. Holt the Chapter's Annual Award for outstanding effort in furthering its aims and objectives during 1959.

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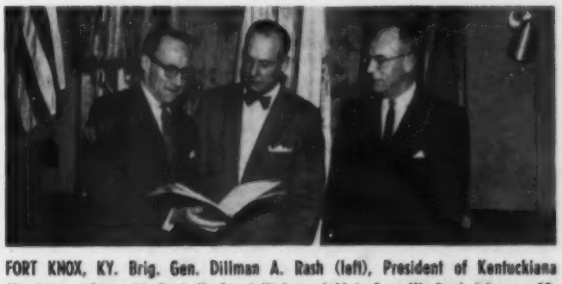

FORT KNOX, KY. Brig. Gen. Dillman A. Rash (left), President of Kentuckiana Chapter, confers with Prof. H. Grant Hicks and Maj. Gen. W. Paul Johnson, CG, USA Armor Center, at head table during bimonthly meeting of Chapter at Noncommissioned Officers Mess. Dr. Hicks, Associate Professor of Political Science at University of Louisville, spoke on "Southeast Asia."

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FORT BROOKE, P. R. Col. Manuel Font (second from right), retiring President of Antilles Chapter, congratulates Col. Miguel A. Munoz, incoming President, during installation ceremony at El Morro Officers' Club. Flanking them are Brig. Gen. John H. McGee (right), Antilles Army CG, and Col. Dulaney O'Roark, CO, USA Caribbean Signal Agency, who was guest speaker.

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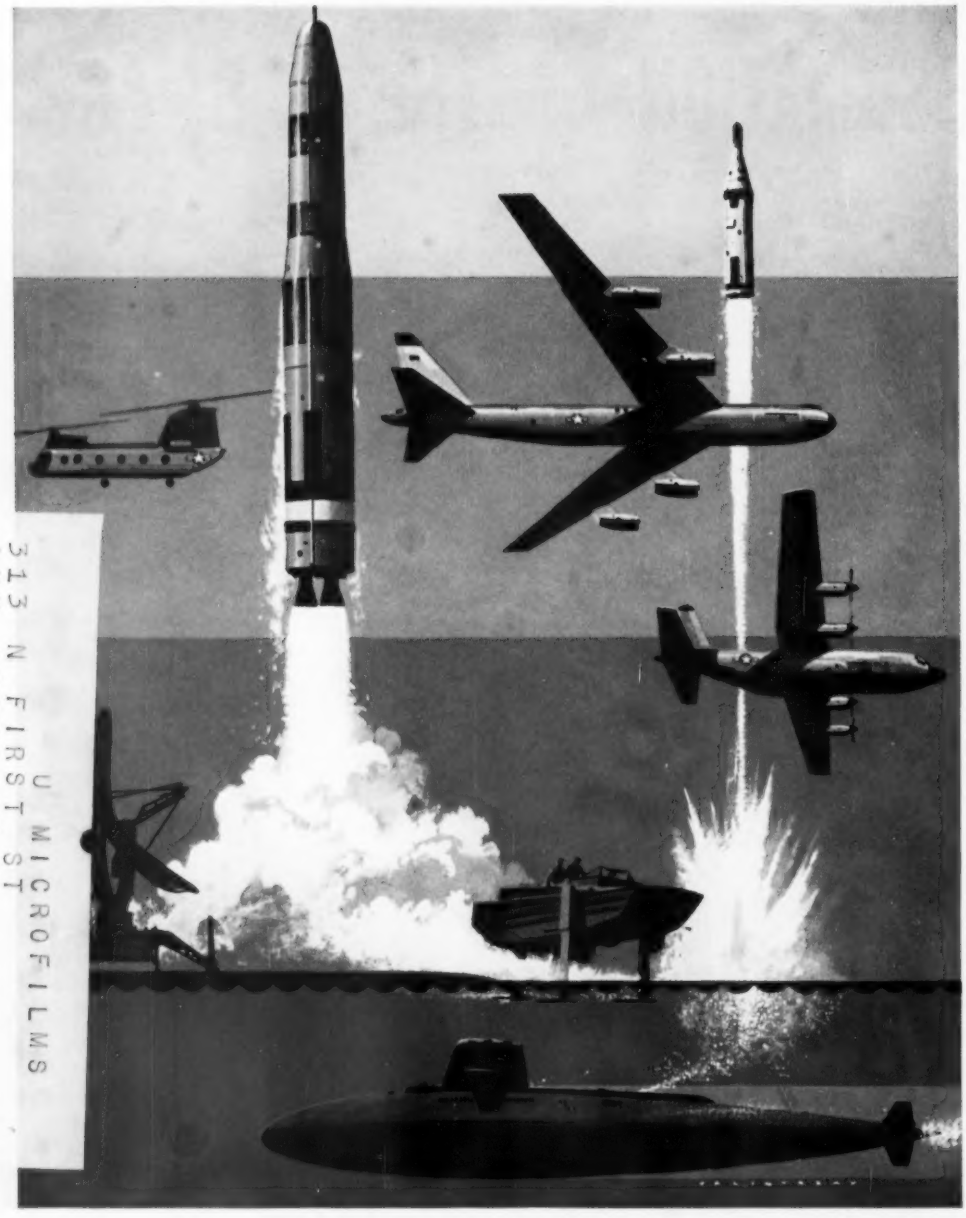

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